AMERICAN FORESTS

JANUARY 1944

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THE SEARCH THAT NEVER ENDS

In the industrial life of America, research has been of constantly increasing importance. And today it is a national resource, for the research of industrial and college laboratories is proving its value in War.

To the Bell System, research is an old idea, for the telephone itself was born in a laboratory. Behind its invention, sixty-nine years ago, were researches in electricity and acoustics and in speech and hearing.

And, ever since, there has been a laboratory where scientists have searched to know more about these subjects; and with their associated engineers have applied the new knowledge, fitting it with all the old, to make the telephone better and better.

Their fields of inquiry have broadened and deepened through these years; they inquire into all the sciences and engineering arts which have any promise of improving the telephone. Much has been learned but still more will be, because their search goes on. That is why the telephone laboratory grew to be Bell Telephone Laboratories, Incorporated, the largest industrial laboratory in the world. And it exists to improve telephone service.

Improvements in industry can be left to chance in the hope that some one, sometime, will think of something useful; that some good invention will turn up.

The other way to make improvements is to organize so that new knowledge shall always be coming from researches in the fundamental sciences and engineering arts on which the business is based. From that steady stream will arise inventions and new methods, new materials and improved products.

This is the way of Bell Laboratories. Its search will never end. And as fast as it can the Laboratories will apply its new knowledge practically to the design of equipment and communication systems.

At present—and this started before Pearl Harbor—its trained scientists and engineers and all their skilled associates are concentrating on products of importance to our armed forces. But when this work is happily over they will be ready to continue their developments for the needs of peace.

BELL TELEPHONE SYSTEM

"Research is an effort of the mind to comprehend relationships no one has previously known; and it is practical as well as theoretical." . . . . . BELL TELEPHONE LABORATORIES

AMERICAN FORESTS

VOLUME 50 JANUARY, 1944 NUMBER 1

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American Forests

Published monthly by

THE
AMERICAN FORESTRY
ASSOCIATION

919 Seventeenth Street
Washington 6, D. C.

The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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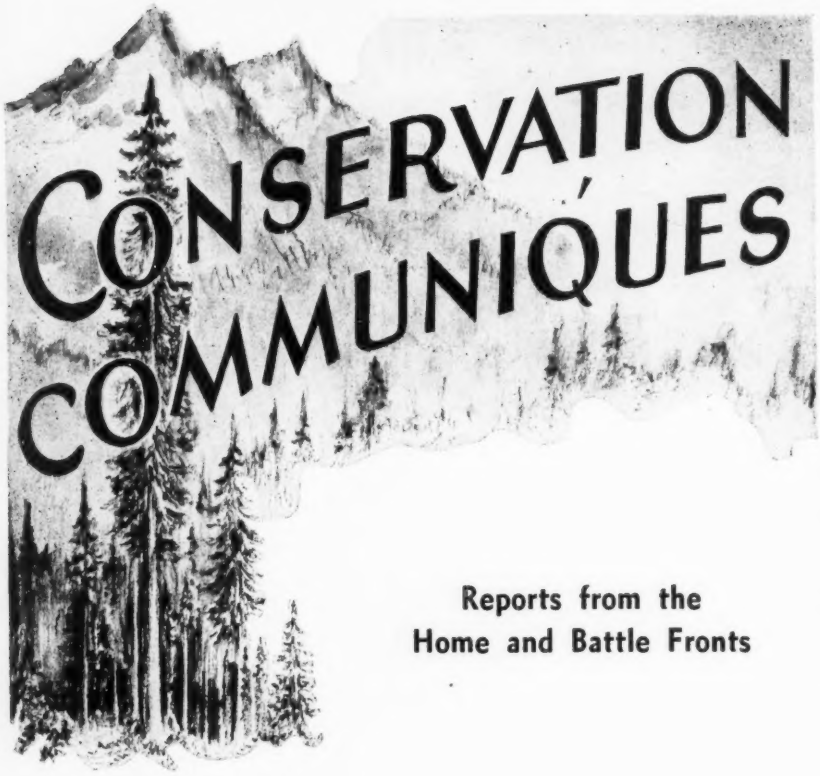

CONSERVATION COMMUNIQUÉS

Reports from the Home and Battle Fronts

Ring up a record for wood. Britain's all-wood Mosquito bombers, it has been officially disclosed, have suffered losses of but one percent in their raids over Germany during the past six months—eleven planes lost in a thousand sorties. This is due to their terrific speed—said to exceed 400 miles an hour.

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Wood is important in the construction of forty other types of British aircraft and makes up approximately one-third the weight of all British planes. Such well-known planes as the Stirlings, Wellingtons and Lancasters contain wood, most of which comes from the United States and Canada. Even the tires contain rayon thread produced from wood cellulose.

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There will be no Christmas trees in Berlin this year. The scarcity of forest workers to cut the trees, along with already overburdened railroads, are given as the chief reasons. According to a Swiss correspondent, "They will scarcely be missed, however, since there is little feeling now for such external things. The people will be quite content if December 25 passes without fires." From allied bombs, no doubt.

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The over-all demand for lumber today is as great as can be met by the industry, and it will continue that way for the duration, according to the WPB. Civilian consumption in 1943 was half of that of 1942, but military needs increased on a grand scale. As new fighting fronts are opened up and supply lines extended, war demands for lumber will jump still more. As an example of military increases, 5,000,000,000 board feet for boxing and crating were used in 1941; the demand in 1943 was for 14,000,000,000 feet.

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Despite MacArthur's recent successes in the Pacific, the Japanese commercial planners are still talking in a big way. Said a recent Jap broadcast, Nippon's Imperial Forestry Association, under the direction of the Ministry of Greater East Asiatic Affairs, will establish a school in Chiba prefecture to train workers "to develop the rich forest resources of the South Seas." Particular attention will be given to research "intended to make Japan self-sufficient in pulp."

British Columbia's depleted ranks of logging and sawmill labor will be replenished to some extent as the result of a decision by Dominion authorities to bring back to Canada at least 1,200 Canadian Forestry Corps men who have been cutting timber in the United Kingdom. The decision was based on a statement that maximum utilization has already been made of Britain's home forests, that the Atlantic shipping situation is greatly improved, and that the men can be used more effectively where timber is most plentiful—in Canada.

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Crepe paper parachutes have been approved for use by American fighting forces to deliver supplies to men whose lines of communication have been cut by enemy action. The new 'chute, made of creped kraft paper, will carry as much as 100 pounds of supplies when dropped from an airplane flying as fast as 180 miles an hour at 3,000 feet. It costs only one-fifth as much as the standard human-type parachute.

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Paper is also in the news from Yugoslavia, where it is reported being used as a substitute for leather. According to the Axis press, a special type of durable paper has been fashioned into links and trimmed with light metal as a leather substitute in manufacturing transmission belts. It is said to be satisfactory.

• • • •

Fur-sealing operations in the Pribilof Islands, conducted in secrecy this year because of their proximity to military operations, resulted in a record take of 117,164 skins, enough for the manufacture of 15,000 coats. The Pribilofs lie in the Bering Sea, just north of the Aleutians. The islands were ordered evacuated in 1942 after only 127 skins were brought in.

• • • •

The largest number of trained volunteer forest fire fighters ever organized in the United States was on guard in the timberlands during the fall fire season, reports the Office of Civilian Defense. More than 185,000 volunteers were being trained and organized in crews by the FFFS—the Forest Fire Fighters Service. Despite this record number, the OCD has issued a call for an additional 65,000 volunteers.

JIM DIED AT SALERNO . . .

At Christmas, three years ago, when he was just seventeen, Jim became a full-fledged conservationist. "The way I see it," said this vibrant, eager youth, "a tree is about like a fellow like myself. They'll be needing me someday to do a man-sized job. They'll need the tree, too. Maybe if we get in there together and start pitching we'll do okay."

They needed Jim at Salerno for a man-sized job. He was in there pitching. He did okay. And this Christmas, Jim's birthday, as our mind turns to the simple white cross that marks his final resting place in Italy, it is comforting to reflect that the other half of this budding partnership, the tree, was in there pitching too. It was in there with Jim—in the speedy landing craft that moved him onto the fiery beachhead, in the mountains of wood encased supplies and equipment piled on the beaches, in there in a hundred other ways fighting, like Jim and his buddies, for the American way of life. Yes, the tree was in there pitching. Like Jim, it did okay.

Jim's fellowship with trees dates back to 1936 when his school was awarded The American Forestry Association medal for an outstanding conservation exhibit. He didn't know very much about the forests, or wildlife, or soil erosion then, but his interest had been captured. And being Jim, he pursued this interest with all the vigor of a healthy, intelligent American boy. "They'll be needing me some day—they'll need the tree too."

Jim is one of the thousands of boys and girls who have found interest in conservation through the educational activities of The American Forestry Association. Over a long period of years, the Association has worked for the teaching of conservation in schools, in youth organizations, and in the home. The medal awarded Jim's class was but one of many given annually not only to schools, but to individual boys and girls whose conservation attainments are outstanding. The Association has promoted the planting of nut trees on home and school grounds, on roadsides and in public parks as a stimulating conservation project for Boy and Girl Scouts, 4-H Clubs and other youth organizations. It has planned, financed and directed intense educational efforts such as its Southern Forestry Educational Project, a three-year program to erase the woods-burning habit of the South. Its official magazine, AMERICAN FORESTS, and its books, AMERICAN CONSERVATION and KNOWING YOUR TREES, are used in the classrooms of hundreds of schools throughout the country.

This education of youth, which has been such an important phase of the Association's work for more than a half century, is needed now—and in the days to come—more than ever before. Jim, who early realized that both youth and trees would be needed someday for "a man-sized job," died at Salerno. We need to develop more Jims for the man-sized job of peace.

The Hope of Peace

No New Year in all history has witnessed so many people cherishing the hope of peace. People numbed by bloodshed, wracked by bombs, poisoned by terrorism, tormented by slavery — starving, desperate people whose light of hope, once flickering, now burns brightly again. Peace, so carelessly spent in the days before Munich, is a world prayer once more.

When peace does come — as it must — what will it mean to this war-shocked globe? The end of suffering? No more terror? Freedom to worship as one pleases? Opportunity to work and live under decent standards? Peace will mean all of these things — and many more — if the resources of the world are appraised for intelligent and constructive use. There is enough of everything to go around if we manage what we have in the spirit of wholesome survival. Despite the incalculable waste of war, there is enough land, there are enough forests, and enough water to write the kind of peace that will endure. All that is needed is realization of this on the part of the men who write it.

Let us resolve this New Year to fight for a peace that will live — a peace founded on our soundest conservation concepts.

Sweet Gum or Sweetgum?

In the past, the editors of AMERICAN FORESTS have followed what they believed to be the generally accepted usage in plant names — both common and botanical. Plant nomenclature being what it is these days, this procedure has not been without discord. Whenever "sweet gum" is used, readers protest that it should be "sweetgum." To use "bur" oak is to invite a reminder that the proper spelling is "burr." Authors demand an explanation as to why their "Norway" pine becomes "red" pine in print. The editors are helpless in this growing debate. Even they differ at times as to what is the best usage.

Why taxonomic botanists find it necessary to change the Latin names of trees is not for the lay mind to understand. It means little to the average reader whether the humble jack pine of the Lake States is *Pinus banksiana* or *Pinus divaricata.* Yet it is of importance to the scientists, although they disagree among themselves, for both names are in use. The editors are supposed to decide which one is more broadly accepted.

To put an end to this uncomfortable position, the editors are celebrating the New Year by adopting a single authority. Henceforth, both common and botanical names appearing in AMERICAN FORESTS will conform to *Standardized Plant Names,* prepared by the American Joint Committee on Horticultural Nomenclature. Both readers and authors will no doubt offer some objection to this — but we are sticking with it. That is, ninety-nine percent. The editorial blue pencil may reduce "southern red oak" to a mere "red oak," for example, if the locale of an article is clearly south of the Mason-Dixon line — and if the tree in question is *Quercus falcata.* Too, it will be a great temptation to continue with "Douglas fir," instead of "Douglasfir." So if we slip up on this, the reader will know why.

Prisoners in the Woods

Prisoners of war, both German and Italian, are now swinging axes in American forests. Between 5,000 and 7,000, mostly Germans, are being employed in the South on pulpwood operations, and plans are under way to extend their use to northern pulpwood producing areas. No war prisoners have as yet been employed on lumber operations, mainly because the Geneva Convention prohibits their use on hazardous operations.

The United States Forest Service is acting in liaison with the Army in training prisoners and in assigning them to specific operations. Noncommissioned officers are instructed in the simple operations of felling, cutting into lengths, peeling and hand-loading the small-sized timber cut for pulpwood. This basic training is then passed on by the non-coms to men of the ranks — a system the Forest Service has found to produce good results.

Most prisoners, it is stated, take quick advantage of the opportunity to work, primarily because it increases their daily allowance from ten to eighty cents — to a dollar if they are on piece work. This payment system in no way competes with American labor, as the Army charges the operator using the prisoners the prevailing wage for the region.

The pulpwood operators provide foremen to supervise the work of the prisoners, who are constantly under Army guard and are not permitted to mix with civilian labor.

The number of war prisoners so far employed in woods work is small in comparison to the total — 166,000 — now in this country. This number, however, will be greatly increased — and soon. Operators struggling with manpower shortages and who are in a position to employ war prisoners should contact the Forest Service through its regional offices at Atlanta, Philadelphia or Milwaukee.

Buttonwood Mission

The shortage of vegetable tanning extracts, highlighted recently by charges before the Senate Military Affairs Subcommittee on War Mobilization that this country is at the mercy of an English-Argentine quebracho monopoly, is given a new note by the departure late in December of a United States mission to Mexico to explore possibilities of developing the tanning properties of the mangrove-like buttonwood tree (*Conocarpus crecta*). The buttonwood is known to possess a high tannin content and its successful development just south of the Rio Grande would greatly assist the war effort, and at the same time open up possibilities for a less remote peace-time source of supply than the Argentine.

Ovid Butler

"Their roots are the nurses of rivers in birth"

—Henry Van Dyke

Editorial

GOING AFTER THE FACTS

SOMETIME during 1946, if we accept current military prognostications, World War II will come to a victorious end. On that historic day this nation will come face to face with two pressing questions. The first, what is the state of our resources after five years of total war? The second, how will we meet the reconstruction job ahead. So closely related are these two problems that they are inseparable. Upon the first rests the answer to the second. From the second will come the ultimate answer to the first.

If this seems enigmatic, let us be reminded that the task of putting this country back on a peacetime economy will be measured by the extent and availability of the materials we have to work with; that in putting these materials to use we shall frame policies for management of resources, and that these policies will go on affecting the quality and abundance of such resources during the years to come. These things being true, we must plan wisely upon a basis of fact.

Viewing our forests as such a resource, where do we stand? On the day the war ends shall we possess the facts needed for such planning? As the situation stands today—no. Over the years much valuable information has been assembled by federal, state and private forest agencies. Yet the overall forest resource picture, specifically appraised in the light of war drain and dislocations and of postwar needs and policies, does not exist. Nor are down-to-date facts and information being gathered and organized for the country as a whole.

This is why, early in 1943, The American Forestry Association proposed a fact-finding survey of what the war is doing to our forest resources and what condition they will be in when hostilities cease. To lift postwar forest questions above the level of controversy, pressure group representations and public confusions, it asked public financial support of the undertaking and offered its instrumentality as an impartial, non-governmental and non-commercial organization to carry it out.

The people of the country have now accepted this opportunity to establish a sound base upon which to deal with their postwar forest problems. Contributions sufficient to assure two-thirds of the job needed to be done are on hand. The fact-finding survey is now a reality—officially launched on January 1 (see page 8) as a memorable tribute to the determination of a free people to meet the challenge of the future with the weapons of fact and realism.

The American Forestry Association, for its part, will bring to bear every facility at its command to honor in full this public trust.

STATE FORESTER EXTRAORDINARY

THE accomplishments of a forester are not measured by the extent of forest over which he presides, but by his success in making his domain—be it large or small—yield the maximum of returns in human welfare and in passing it on to his successors in more productive condition than he found it. By these criteria Austin Foster Hawes, who is soon retiring as state forester of Connecticut after twenty-five years of public service in that position, has achieved a high place in American forestry.

Connecticut has the distinction of being densely populated, highly industrialized and nearly sixty percent forested. Her citizens value their woodland more as an adjunct to living than as an economic resource. Those able to afford it have their own woodland estate, large or small according to their means. The less well financially endowed look to state and local forests and parks for day or season-long picnic and camping places. Great numbers of hunters and fishermen range the wooded hills and follow the shaded streams, thinking chiefly of more game and bigger fish. City engineers and water company officials want large forest acreages surrounding municipal reservoirs, but are generally indifferent to whether their watershed forests yield wood crops or not. The farmers, still the largest forest owners, realize that there is money in their woodlots but are mostly willing to follow ancient mores and cut them clear for cordwood every thirty or forty years.

Mr. Hawes' unique value to his state and profession is that he understands all these aspirations and points of view and has been able to work harmoniously with all these groups toward a coordinated forest policy without ever losing sight of the ultimate value to his state of developing its forests as a direct economic asset. A man of lesser vision and talent might have been able to work harmoniously with them, but only an outstanding one would have been capable of keeping constantly before all the public the importance of rebuilding the over-cut and degraded forests of the state for the production of timber crops.

Some day Connecticut will thank Mr. Hawes for having started the re-creation of forest industries on several hundred thousand acres of otherwise low producing land. Foresters already acknowledge the outstanding quality of his work in all varied tasks of a state forester, ranging from statewide fire protection, the making of long-range management plans and research in silviculture and utilization to popular education. Even on the basis of his past achievements, we venture to predict that in the years to come his stature as a forester will continue to grow and to be ever more widely recognized.

One of the younger men of the earliest group of American trained foresters, Mr. Hawes still has much to give to his profession. He has demonstrated a talent for investigation and writing in forest history. Now that he is free of official duties, we look to him for further distinguished work in this field.

FOREST APPRAISAL PROJECT IS LAUNCHED

FACT-FINDING SURVEY OF THE AMERICAN FORESTRY ASSOCIATION TO DETERMINE THE EFFECTS OF WAR UPON THE NATION'S FOREST RESOURCES GETS UNDER WAY

AS A contribution to postwar reconstruction and to factual handling of postwar forest questions, The American Forestry Association on January 1 formally initiated its fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when hostilities cease.

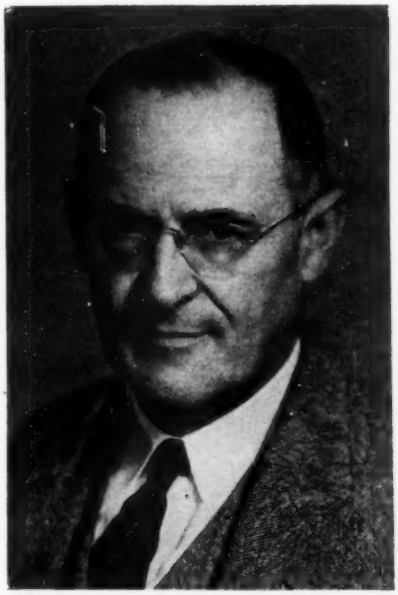
Public-spirited citizens, state and private forest organizations and industries concerned in better management of forest lands have made this early launching of the survey possible by underwriting approximately two-thirds of the cost. In late December, cash subscriptions amounting to $115,000 had been received, while cooperative services valued at more than $50,000 were assured from state forestry sources. Approximately $85,000 still must be raised, however, to underwrite the three-year nationwide project on the basis originally planned.

With the overall objective of providing at the war's end a fund of basic down-to-date factual information upon which state and national questions of forest conservation, management and land economy may be dealt with, the survey will cover every forested state and county in the nation. Such a basis, the Association maintains, is essential if the many public and industrial interests concerned are to be given proper consideration in postwar reconstruction programs.

To direct the survey, the Board of Directors of the Association has engaged John B. Woods of Portland, Oregon, a forester of wide experience. A Project Committee of five members, prominent in state and federal forest services, forest industry, agriculture and the profession of forestry, has been set up to advise with the director and his staff.

Mr. Woods, who on January 1 began organizing the project for an early start of field work, has engaged in forest work in all the important forest regions of the United States. In addition, he has studied forest conditions in the countries of Europe, and in Australia and New Zealand. During the first World War he served with the 20th Forest Engineers in France. He graduated from the Biltmore Forest School in 1913.

Manager for the past four years of the Oregon Forest Fire Association, Mr. Woods previously served as valuation engineer in the Timber Valuation Section, Income Tax Unit, of the Treasury Department; as chief forester for the Long-Bell Lumber Company whose holdings were in the South and West; as forester for the Lumber Code during the days of the NIRA; and as forester for the National Lumber Manufacturers Association.



John B. Woods
Director of Fact-Finding Survey

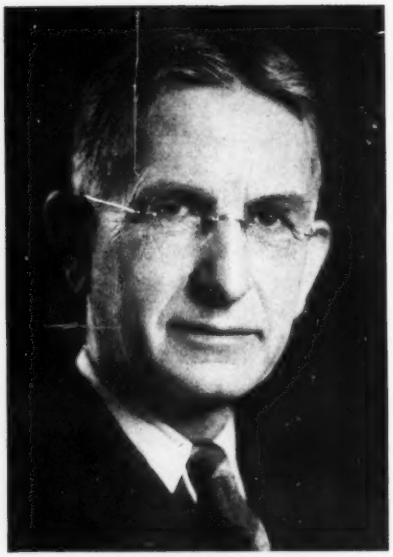
Members of the five-man Project Committee to advise with Mr. Woods are as follows: William G. Howard, director, Division of Lands and Forests, New York State Conservation Department; James W. Girard, Division of Forest Economics, United States Forest Service; William B. Greeley, former chief forester of the United States, now secretary-manager of the West Coast Lumbermen's Association; S. T. Dana, dean of the School of Forestry and Conservation, University of Michigan, and editor of the *Journal of Forestry*, official organ of the Society of American Foresters; and E. O. Siecke, Nebraska farmer, and for a quarter of a century a forestry leader in Texas and other southern states. The personnel of this committee assures bringing to bear upon the project and its execution the best advisory knowledge and experience of the five fields represented.

Mr. Woods will have a staff of six or eight men experienced in forest appraisal work to be located in each of the principal forest regions of the country. These men, with such temporary assistants as may be needed, will inventory forest land conditions. They will study the effects of war on the forests; they will assemble and analyze information available from local and national sources; and they will undertake such field work as may be necessary to round out and bring down to date the forest land picture by states, regions and the country as a whole.

The appraisal will be carried forward as a cooperative undertaking in which all interests pool their best efforts to establish facts as to forest conditions and problems as they will prevail after the war has run its course. Assurances have already been given by state forestry departments and other state, regional and federal agencies of cooperation within the limits of their facilities.

Specifically, the following lines of study are proposed: (1) Recapitulation of forest and farm woodland surveys—inventory of timber, growing stock, and

William B. Greeley



Samuel T. Dana

forest lands; (2) ownership and management of forests by federal, state and private classifications — land, timber, and other forest values; (3) extent and character of forest drain since 1940; (4) utilization trends, with particular attention to wartime uses and peacetime possibilities; (5) marketing of forest crops; (6) public attitudes toward forest resources and industries; (7) permissible postwar drain — silvicultural, quality and other economic factors; (8) scope and effectiveness of forest legislation with reference to protection, perpetuation and utilization of forest resources; (9) ownership problems and trends—local and federal taxes.

The study unit for the survey will be a state, but appraisal data, to the extent found feasible, will be checked at the county level.

Much prewar information is available concerning the forest resources of this country and their utilization. The ten-year forest survey conducted by the United States Forest Service, in certain important regions, has provided invaluable data as to forest areas, forest stands, forest growth and forest drain. States and many counties have collected much valuable information as to local resources. This basic work does not need to be repeated. The purposes of the Association's fact-finding survey are to assemble and organize these prewar data and to supplement them with information as to the effects of war on forest conditions in all the forest states.

This urgently needed, down-to-date information is not available in usable form at the present time. We have no complete picture of our overall forestry situation.

As early as possible in 1944, a series of conferences will be held to formulate work plans, standards and techniques. The Project Committee and the staff will participate in these conferences, as will experts from appropriate federal and state departments and from interested industries. In the meantime, the Association will continue the campaign to complete the project budget of $250,000.

To this end, it is the hope of the Association that every citizen, industry and organization interested in forest land management—in fact, in the whole field of natural resources—will have a part in this undertaking as a contributor. By so doing, they will join the following list of men and women, industries and organizations — representing thirty-seven states and the District of Columbia—whose contributions through December 21 have made possible the launching this New Year of what may prove to be one of the most significant undertakings in conservation history:

Mrs. Emah B. Ammon, Lincoln, Nebraska; Miss Kate R. Andrews, Rochester, New York; Arizona Wildlife Federation, Tucson, Arizona; Albert Arnst, Sedro Woolley, Washington.

C. Weston Bailey, East Orange, New Jersey; Baker, Fentress & Company, Chicago, Illinois; Francis J. Baker, San Francisco, California; Mrs. Elizabeth B. Ballard, New York City; Edward H. Bangs, Riverside, Illinois; William J. Baxter, Wilmington, Delaware; David T. Beals, Kansas City, Missouri; Walter

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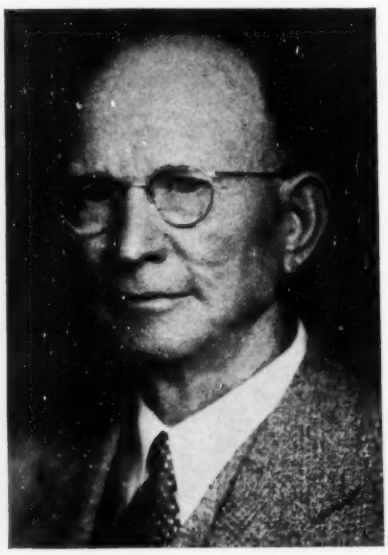


James W. Girard

E. O. Siecke

William G. Howard

THE "FARRAGUT FOREST"

It Helps Build Fighting Men in Northern Idaho

By EUGENE F. McNULTY

YOU have never heard of the "Farragut Forest." There is none such by name. But you may know of Farragut, the nation's second largest U. S. Naval Training Station. Actually, the "Farragut Forest,"—the pines, the larches and the firs are there, for this great inland naval base lies midway between the Coeur d'Alene and the Kaniksu national forests of northern Idaho. Nearby are the shores of one of America's most enchanting Alpine lakes—Lake Pend Oreille.

Although carved out of the wilderness not very long ago, the Farragut Naval Training Station does not visibly disturb the natural forest setting. Happily enough, the six camps comprising the station were so planned that the forest would remain, thus serving to isolate the separate training areas. The added beautification of the densely wooded station sites is now apparent, and by sparing the trees the planners have spared Farragut of barren ugliness.

Added to these benefits is the fact that the "Farragut Forest" builds men. "When it comes to building Navy men you simply can't beat a hike over forest trails. We are so convinced of this that regular hiking parties are conducted each Sunday to surrounding national forest peaks." Thus spoke Lieutenant E. E. Boushey, USNR, Welfare and Recreation Officer at Farragut, and former professor of physical education at the University of Oregon.

Lieutenant Boushey, who has led many hiking parties through the Oregon Cascades, sees still other values gained from the forests. "Not only do the forests strengthen our men physically," he emphasized, "but recruits in training who take advantage of these hikes find new inspiration. Away from the discipline of barracks life, an afternoon out in the woods gives the men a refreshed outlook. The wildlife, trees and shrubs along the trails, and above all the inspiring panoramas seen from the mountain tops, build Navy morale at Farragut."

Beginning early in March, when the hills of Idaho were heavily blanketed with snow, the Sunday afternon hikes have always proved a popular station activity. According to Chief Specialist K. E. Hartzler, USNR, Walfare and Recreation Department, who often acts as party guide, several hundred men have participated in a single outing.

Wholly unexpected one Sunday in April was an incident which added much to the interest and novelty of the hike. While scaling a rock ledge overlooking the serene waters of Lake Pend Oreille, the men were suddenly met by a herd of twenty frightened deer. One doe, apparently excited by an encounter with Uncle Sam's fleet, collided with a bluejacket, knocking him completely off the trail. Luckily the recruit, Eugene F. Miller, was a westerner, and therefore suffered little "buck fever." He admits, however, that being bumped around by a doe is just a little out of the ordinary, even for a westerner.

A Sioux Indian trains for the Navy in the Farragut Forest—a land as wild and untouched as that his forefathers knew

So plentiful are deer at Farragut that a favorite true story is told of a big buck that crashed through a window in the swimming pool end of a barracks hall, plunged into the pool, swam to the far end, and lunged out to freedom through another window.

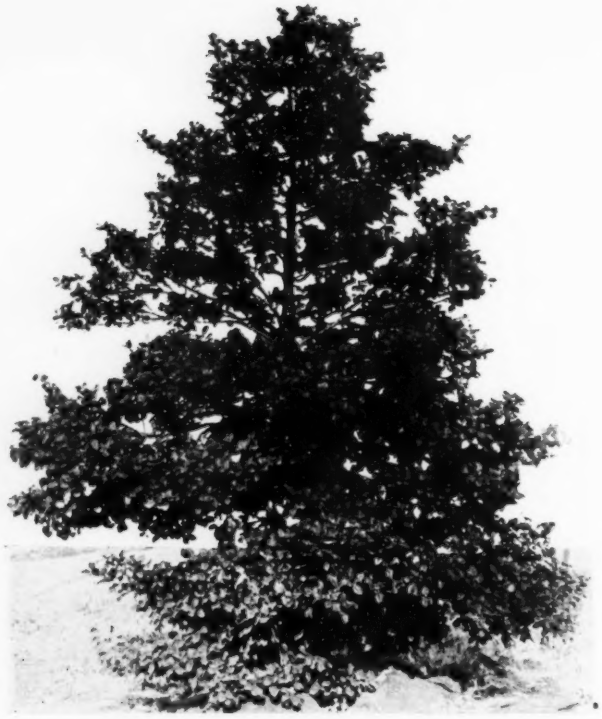
While the deer are, without doubt, the most popular wildlife sight, a native grouse, roused from its forest perch, is an almost equal source of delight. Adding to the already abundant wildlife are fifty Chinese pheasants recently presented to the station by the Idaho Department of Fish and Game.

To protect the "Farragut Forest," the wildlife and the huge training station proper, Navy and forestry officials are planning an intensified system of forest fire protection. Under consideration is the proposal that selected recruit companies be given training in the rudiments of fire control. U. S. Forest Service men of the Coeur d'Alene and Kaniksu national forests are prepared to instruct such companies in the use of forest fire-fighting tools, trail building and other fire control techniques. Already trained with modern fire equipment are sixty-five firemen under the station fire marshal.

The "cigarette flipper" looms as one of the greatest dangers to the protection of "Farragut Forest." Raw recruits who come by the thousands from the Midwest and major eastern cities do not at first know the potential danger of the cigarette, and so strict regulations against smoking are enforced.

Meanwhile, plans have been made for the manning of lookout points overlooking the huge Farragut Naval Training Station. While the number and location of these towers must remain a military secret, it is safe to assume that they will give unparalleled detection.

Formerly a sportsman's paradise, with pleasure seekers engaging in hunting, fishing and boating, Lake Pend Oreille and the surrounding Bitterroot mountain country appear little different today than they did when frequented only by nomadic Indian tribes. Almost hidden by the "Farragut Forest," however, is one of America's greatest naval training centers. Here youth is trained for action against the enemy, and the forest has its role in preparing these men.



Holly Culture AS A HOBBY

Industrialist Clarence Wolf Demonstrates What a Sense of Beauty and a Practical Understanding of Growing Things Can Produce

By ALDEN T. COTTRELL

"SIX 50-ton hoppers, eighteen 50-ton gondolas." In crisp tones Clarence Wolf, president of the New Jersey Silica Sand Company, ordered freight cars for the next day's shipments of high grade molding sand, dug from the pits near Millville in southern New Jersey. Unassuming, efficient and practical, his whole demeanor belies his interest in holly culture. Furthermore, operating a sand plant appears to be a drab business, not one likely to stimulate an aesthetic sense. Yet Clarence Wolf has acquired a fine sense of the beauty of the holly tree, an appreciation of its significance and a realization of the delight it affords during the holiday season, which he demonstrates in an extremely novel way.

Although a hobby, he probably knows as much about growing holly, how to make it produce large red berries and richly colored leaves, as many nurserymen who earn a living at it. He is developing a plantation which for beauty and variety will one day be unsurpassed.

Evolving an idea, his own, he has added beauty to hundreds of homes at the

The eleven-acre holly plantation that grew out of a hobby. Among these 1700 trees are many wild hollies transplanted from the nearby woods — easy to do when you know how

Christmas season, and his plan should receive the hearty endorsement of those militant crusaders who believe that a gift of holly is *prima facie* evidence of woodland desecration. He preaches the gospel of holly culture and conservation by example. He believes holly should be more favored in the landscape plans of the average home and endeavors to make his townsfolk holly-conscious by contributing, through the Millville Horticultural Society, an annual award to the resident who shows the most interest in holly culture.

He spends vacations and, in less turbulent times travels extensively, to improve his knowledge of this prolific genus which claims nearly 300 species scattered to the ends of the earth. Nurseries on the West Coast have been of particular interest to him because of their production of English holly, which has larger berries and leaves of a deeper green than American holly.

Clarence Wolf became interested in holly some years ago when he and his neighbor and partner, Burdett C. Tomlin, were expanding their sand business. Woodland was purchased near Millville, on the fringe of the New Jersey "pine barrens," where holly, uncommon in the interior, grows in varying abundance. This attracted Mr. Wolf and the idea occurred to him that a box of holly, with perhaps some mistletoe and Princess pine, would make an appropriate gift to their customers and friends. So in 1927 they gathered enough holly and other greens for forty-six boxes, which were sent out during the holiday season. Over the years the number has increased to 800. This has been abbreviated somewhat to relieve the postal situation, but when times become normal they will again send out their full quota of holly.

When a box is mailed a letter is sent to the recipient telling the story of its contents. The letter varies from year to year, but the following, sent in 1939, is perhaps one of the best:

"As far back as we find any record of the human race, we also find the custom of decorating houses and temples with evergreens on occasions of rejoicing.

"Holly, mistletoe and Princess pine take precedence of all other evergreens. The Christmas Season would not be complete without this beautiful greenery.

"Nature has been very kind to this section of New Jersey. The evergreens grow in abundance in the thickness of the forest. For the past several weeks we have been gathering beautiful branches and are today sending you a box by parcel post.

"The holly, with its beautiful glossy and prickly leaves and coral berries, was a sacred plant in the childhood of the world. Its place is high and honored in our literature. It symbolizes the spirit of Christmas.

"The mistletoe is a mystical plant. The Greeks venerated it. Virgil gave it to Aeneas as the 'Golden Bough.' It grows high in the topmost boughs of the gum tree. We have been careful to select the branches with the most berries. Of course, you remember the old tradition of hanging the mistletoe bough.

"In the thickness of the forest, in vast rugs, the Princess pine grows. Possibly it is here where the faries dance on Christmas Eve. We have not met anyone who has seen them, but that is no sign that they are not there.

"We hope that these evergreens will bring joy and cheer to you and your family on Christmas Day."

Mr. Wolf constantly keeps informed on the latest methods of packaging and labeling holly in the commercial field in order to take advantage of improvements in marketing. As a result their gift packages are as well designed and attractive as those sent out by commercial growers. They discovered, for instance, that the commercial boxes were being lined with a heavy waxed paper. Adopting this practice they found the holly arrived in even better condition than before.

For several years plant employees went into the woods a few weeks prior to Christmas and gathered the holly and other greens for the boxes. In 1934, however, the company began to transplant wild hollies to various fields adjacent to the plant. This was to give each tree sufficient growing space to develop heavy, full foliage, and since it was necessary to shape the trees, the trimmings were used for the gift boxes. Soon sizable plantations were established, despite the notion that wild holly is difficult to transplant. Mr. Wolf is certain that if a few simple rules are followed, holly can successfully be transplanted by anyone.

In 1938 a prize plantation was started in an old farm field some distance from the present sand plant operations. Here holly trees are planted sixteen feet apart in rows sixteen feet wide to give each tree a chance to develop good form and heavy foliage. It is to be a permanent plantation.

In this eleven-acre tract more than 1700 hollies have been set out. Many are already beautifully shaped with large clusters of bright red berries. Here have been planted wild hollies from the nearby woods, trees from New Jersey nurseries, from Delaware, Maryland, Cape Cod and Florida. There is also English holly from the West Coast, as well as Chinese and Japanese holly.

Plant employees cultivate and main-

(*Turn to page* 46)

Where to trim a thriving tree for gay Christmas decorations

One secret of holly culture is plenty of hay to conserve moisture

Good growth — well shaped leaves and large berry clusters

THIS IS THE MOSQUITO!

The Nazis are Feeling the Lethal Sting of the World's Fastest Bomber—a Product of Wood

By JAMES MONTAGNES

CANADIAN aircraft plants are to turn out 150 de Havilland Mosquito twin-engined bombers monthly, Munitions and Supply Minister C. D. Howe stated in Parliament at Ottawa recently. This famous all-wood bomber, which is said to travel at a speed of at least 400 miles an hour—actual top speed being of course, a military secret—has made its name in lightning raids over France, Germany and particularly over Berlin. Because of its great speed, losses have been fantastically low.

The plane carries a crew of two, a pilot and gunner, the latter serving also as navigator, bombardier and wireless operator. During bombing operations the gunner-bombardier lies prone in the transparent nose. The crew relies only on the great speed produced by the two 1,250-horsepower Rolls-Royce Merlin engines, made by Packard at Detroit, to shake off pursuers. The plane is fitted with transparent plastic overhead canopy which allows for hindsight.

Because of its all-wood construction, the Mosquito is made differently from any other combat aircraft. Its fuselage is made in two side-lengthwise halves at the de Havilland plant near Toronto, and at the General Motors plant at Oshawa, Ontario, the wings by farm implement manufacturers, and the wing rear and front spars by furniture companies in Ontario. Other sections come from other sub-contractors. All the components come together at the de Havilland plant for final assembly.

The Mosquito fuselage can be called a rolled sandwich of Canadian wood and milk products, in three separate layers, compressed to make a single solid shell. The inner layer of three-ply birch is first laid over a solid concrete mold in which there are indentations holding the cross members in place. All the pieces for this and subsequent "skins" are pre-shaped to fit in their exact places in the completed job. The first layer is "buttered" with a plastic casein glue. A second layer of balsa wood forms the "meat" of the sandwich. This is again "buttered" on the outside before the third and final layer of plywood is applied to complete the job.

The pieces for the various skins, varying from one inch to several feet in length, are pre-shaped with steam heat on molds, and stocked in bins by number. These pre-shaped pieces are then placed in the concrete fuselage mold as needed. When all three layers of birch and balsa are in place and joined with glue, steel pressure bands are placed over the outside skin of laminated birch to compress the whole job into one solid piece. Each half-fuselage looks like a nearly completed boat when taken off

The fuselage, made in two sections, is constructed of three separate wood layers. Left, the inner layer of 3-ply birch on concrete mold. Right, the completed job, ready for installations

Capable of 400 miles or more an hour, the Mosquito, built almost entirely of wood, is especially adapted to long range bombing and reconnaissance

the combination mold and jig. Part of the drying process of the glue is done by placing the form under a battery of 250 infra-red lamps.

When the first stages of the lengthwise half-fuselages are completed, they are given two coats of oil and gasoline resistant paint and filler. The inside is painted a restful green, and the outside a light maroon, thus making a very colorful assembly line. The two halves are not interchangeable, but are made and assembled simultaneously.

From here the half-fuselages are rolled on to double conveyor lines where all interior fittings and instruments are installed before the two halves are fused, thus saving the difficulty and lost time involved in working in cramped quarters of the finished fuselage. This also makes for greater ease of inspection, and reduces costs considerably. Practically all wiring is put in place while the two halves are separated.

Finally the two halves are mated by fitting together the snug V-shaped tongue-and-groove junction which extends all around the vertical contact plane. The fuselage is then bonded with an aluminum nailing strip, and exhaustive tests are made here to insure that every angle in the fitting is exactly right. At this stage a canopy of perspex plastic transparent material on a welded steel tube structure is fitted over the top of the seating space, and separate windows of the same material are installed in the nose and lower front section for the gunner. An emergency exit is incor-

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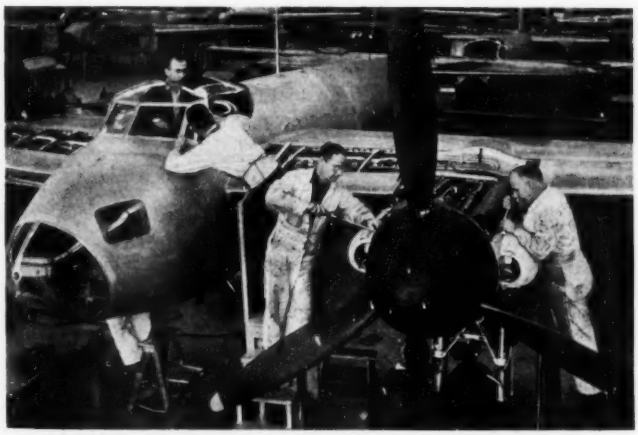


Thousands of pounds of aluminum fittings go into the finished job. Powerful engines add weight

So do several miles of wiring

HOW IS THE RANGE HOLDING UP?

With Herds Increasing, Immediate Action to Restore Livestock-Forage Balance Will Keep the Western Grazing Lands Producing for Victory

By ERLE KAUFFMAN

TWO years have passed since the great rangelands of the West were called upon to supply meat, wool and hides in maximum amounts for a nation at war. The extent of this demand is reflected on the fighting front by our growing armed might, greatest in history, on the home front by unparalleled industrial expansion, and overseas by increasing lend-lease needs of our allies. To meet it, we produced in this country last year ten billion pounds of beef and veal, an increase of twenty-seven percent over the 1935-1939 average, and a billion pounds of lamb and mutton, an increase of thirteen percent—an all-time production record.

How well the rangelands, along with the farming areas, have met this call to arms can be measured by the fact that our fighting men are well fed and clothed, that civilians, despite rationing, scarcities and black markets, are still the best fed and best clothed peoples of the world. But after two years of meeting unprecedented demands for critical wartime commodities, how is the range holding up? Recalling the disastrous effects of over-expansion during World War I, the question is of paramount interest.

Fortunately, the mistakes of 1918 and 1919 were still fresh in the memory of public officials and many stockmen when Jap bombs ushered in the present conflict. At that time the range as a whole was fully stocked. The number of cattle in the seventeen western states —33,000,000—was almost equal to the first World War peak. There were more sheep and lambs—42,000,000, with 37,000,000 stock sheep. Such stocking was possible because of improved range and herd management, along with more farm pastures and forage and greater supplemental feed on the range. But the insatiable appetite of war recognizes no limitation. Meat, wool and hides were needed in increasing amounts. It was up to the rangelands, no less than the farmlands, to supply these needs. What was the answer?

It was still better range management and more intense management of existing livestock. Public officials and stockmen hoped to meet war demands for these commodities by keeping livestock numbers in balance with forage and feed supply, by producing more calves and lambs, by putting on more pounds per animal, and by increasing marketing. In the western states, early production plans called for a marketing increase of seventeen percent over 1940—forty percent in the plains states. This was for cattle. Sheep and lamb market-

ing was calculated at 23,000,000 animals for the nation as a whole, the western states supplying the great majority. In this manner, it was believed, war demands could be met without damage to the range or breeding herds.

This was early 1942. Now, after two years of war, what is the situation? According to W. R. Chapline, chief of the Division of Range Research, United States Forest Service, marketings of both cattle and sheep have been at peak levels. This is true not only of the West but of the nation as a whole. But despite this, cattle marketings have not kept pace with the growing numbers of stock. Western herds increased three percent during 1942—the increase was four percent for the nation—and there is every indication of further increases. Meanwhile, forage and feed in most range localities are shorter in quantities per animal unit than a year ago, and inroads are being made on reserve feed.

In view of this situation and of unprecedented demands for beef and veal, greater marketing would seem in order. But this is not what is happening. Calf deliveries to principal stockyards, although expanded, are still below comparable 1942 figures. Federally inspected slaughter of cattle and calves in 1943, which normally makes up sixty-five percent of the yearly total, will be considerably below that of 1942. With

Labor difficulties and active markets have brought about a decline in the numbers of sheep in the West—a decided help to the overburdened range

To produce the maximum amount of meat for war needs, stockmen are increasing supplemental feeding on range lands

larger numbers of cattle in the country, it should be greater. Feeder cattle, animals brought in from the range to be fattened before marketing, are off slightly from shipments in 1942. This reflects in part a heavy increase in the price of feed for this purpose. Indeed, the uncertainty of prices, plus increasing costs of production, has much to do with the current marketing situation. Slaughter cattle prices at primary markets in late 1943 approached 1942 prices; feeder cattle at that time were off about a dollar a hundredweight from 1942.

"In view of the high price for feed," says Mr. Chapline, "the current situation, even with widening price margins, offers only average inducement for profit in feeding cattle—much less than in 1942. Uncertainties of price control add to the risks. With large numbers of cattle in the country and with the demand for beef continuing at a high level, it would be beneficial to the range if peak numbers were placed on feed this winter. But of even greater importance is the necessity of getting as many cattle as possible into the feed lots to produce the meat needed next spring and summer."

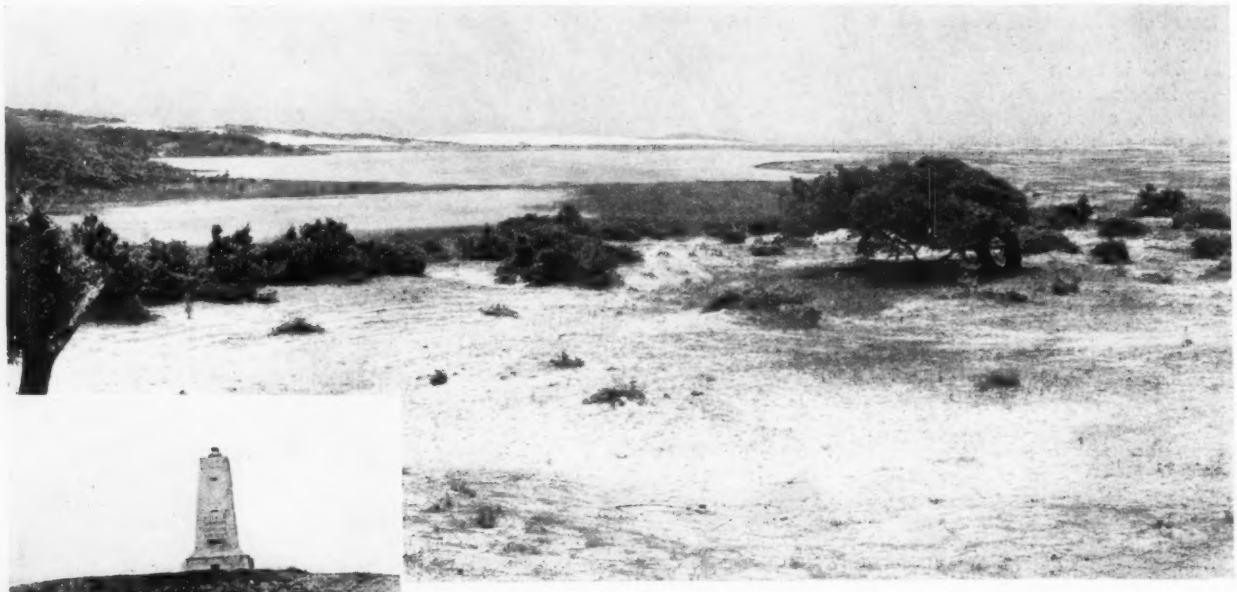
The sheep situation in the western states is more favorable. Numbers have declined seven percent—six percent for stock sheep—due to labor difficulties, relatively high prices and active markets. Unusually heavy imports of wool from Australia and New Zealand have lessened the need for increasing national production, despite the fact that wool consumption is now at an all-time peak. The labor situation may also prove an important factor in further liquidating range sheep.

In essence, war drain on the rangelands of the West is at its peak, with overgrazing occurring. Additional numbers of livestock cannot adequately be cared for, nor can the present numbers be maintained for long without serious injury to the grazing lands, especially if a drought should strike the West this summer. The solution today, as it was two years ago, is to balance and then hold in balance numbers of livestock with forage and feed supply. Numbers are now excessive, a situation which can be overcome by closely culling herds and promptly marketing surpluses—even reducing herds where range forage and other feed supplies are short.

Generally speaking, the range is holding its own—but only by a slim margin. Vigorous and immediate action in restoring the livestock-forage balance, reducing the breeding stock if necessary, will, it is believed, produce the most meat and keep the western grazing lands producing for victory.

SKELETON OF ATLANTIS

By CHARLES ELLIOTT



Hatteras—a gash against the blue in the distance—might have been a skeleton outline of the lost Atlantis

Monument to the Wright Brothers at Kittyhawk

AT Whalebone filling station, where some enterprising osseographer has partially reconstructed the backbone of a whale, a narrow road turns off into the sand dunes. Sou' sou'east it gallops over the sand-filled tracks into one of the most primitive and most romantic lands left on the North American continent today.

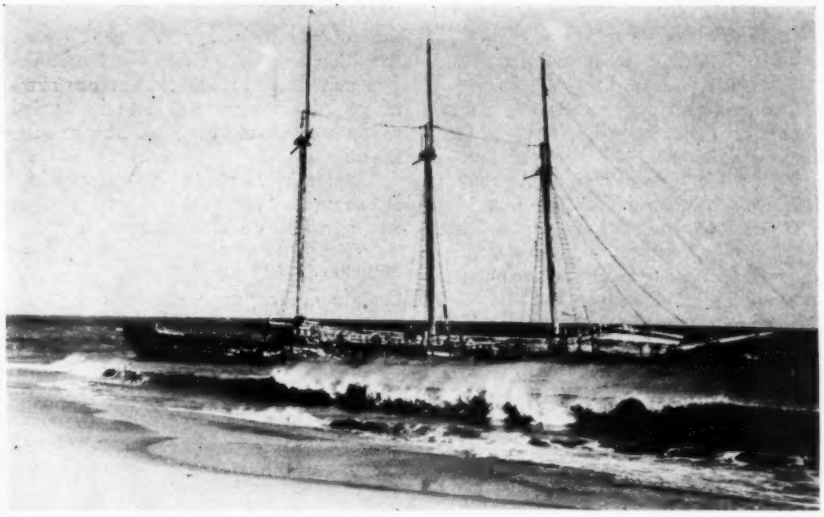
When, at some future date, you pull off the thin-flanked highway into the Whalebone station as we did several years ago, to spew some of the air out of your tires for better traction in the sand, you will probably ask where the paved road goes. You have already come many miles over the narrow spit of land that shields the Virginia and North Carolina coasts for almost 200 miles, and you know that Pamlico Sound, somewhere west, lies between you and the North American mainland.

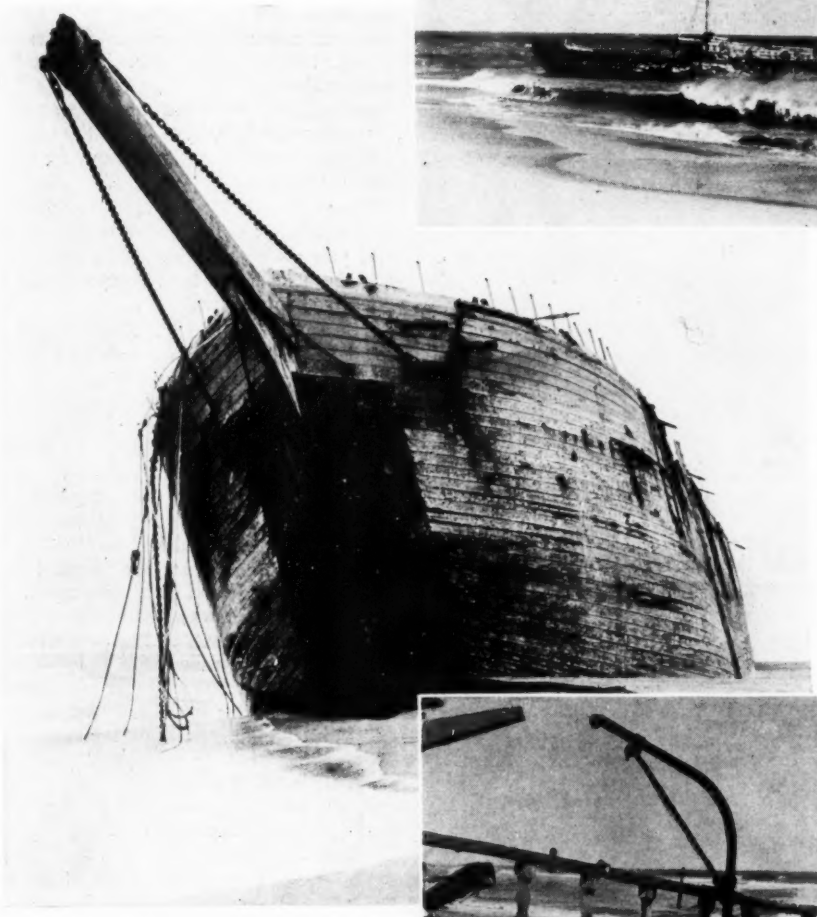
The man at the station, if he is still there, will answer that question for you and a good many more you do not ask. He will tell you that the hard slab goes to Manteo, the largest of the barrier island cities, with a population of 571 when everybody's home. He will tell you that Manteo lies on Roanoke Island, where the English attempted their first settlement in North America and where little Virginia Dare was born. He will tell you that the huge white monument you passed on the hillside back up the road was the memorial to the flying Wright Brothers on Kill Devil Hill. There they made the first flight in a heavier-than-air machine. He will want to tell you other things about this fascinating land of mystery and beauty.

Maybe he could have talked with us for hours had we not been in such a hurry to point the nose of our jalopy into the sand dunes and slug away the miles between us and the paved highway. But Pete had already flattened his tires and was examining his watch to see how much time we would need to catch the ferry at Oregon Inlet. So we told the station master goodbye and roared away from the Whalebone, hoping that our partially flattened wheels would hold us on the soft sand and with a tingle at the base of our scalps because we knew that we would ride this sandy trail with the ghosts of buccaneers and fighting men and spirit ships of other days.

Before us, bulwarked against the green Atlantic, lay the 62,000-acre proposed National Seashore Park, stretching 115 miles in a general southerly direction. It was dotted with tiny isolated

towns and scattered houses. At regular intervals were Coast Guard stations, for it is one of the most dangerous bits of coastline in all the world. Yet it was wilderness land, visited by comparatively few people, mostly fishermen. It supported a moderate population of deer and wild turkeys. Ocracoke, the southernment island in the group, contained a herd of wild horses. Thousands of birds nested and raised their young on





Here for ages past merchant vessels, schooners and freebooters have run aground. Skeletons appear in the shifting sands almost overnight, and are pounded to pieces by the waters of the Atlantic. Countless treasure has been spilled on the sands of Hatteras

the beaches. It was a bit of primitive North America we might have expected to find if we had followed Captain John White across the broad Atlantic in his creaking, pint-sized wooden ship.

We roared out of the dunes and onto a broad sand flat covered with patches of water. A mile ahead sat the box-shaped house where the ferryman lived and beyond that we could see the ferry tied up to its dock.

"Can we make it?" I asked.

Peter extracted his watch and glanced down to answer my question. "We've got ten minutes," he said—and almost before his words were out, the automobile had swerved out of its tracks and pitched headlong into a bank of soft, wet sand. One instant we were hurtling across the sand flat. The next instant we were stuck in sand and silt.

Pete, an old hand at this sort of thing, pulled off his shoes, rolled up his pants legs and climbed out. John Fishback, at that time superintendent of Santa Rosa Island National Monument, who was making the trip with us, stuck his head out of the back window.

"Can I help?" he asked.

"After I pack this sand," Pete replied, "it may come out, if you'll push."

John and I kicked off our shoes and crawled out. But in spite of the roar-

ing motor and our tugging, the car would not move. We were still wrestling with it when John stood up and grinned. "It's no use," he said.

I looked over my shoulder. The ferry had pulled away from its dock on schedule and left us stranded on the flat.

Pete was a man of action. As soon as the ferryboat was safely in the middle of the stream, he walked over and borrowed the ferryman's weather-beaten automobile, with which we yanked our own car out of the sand.

I was glad we had missed the boat. It gave us a chance to get acquainted with Pete. While we waited an hour and a half for the next ferry, he told us many things about this spit of land lying south of Oregon Inlet.

Pete said that during the past few years since the idea of establishing a national park along the ribbon of sand was first conceived, the barrier islands had attracted wide attention. Old myths and legends with long gray beards popped up their heads to be told and retold. The islands had been a rendezvous for famous buccaneers who cutlassed a place for themselves in the early marine history of our nation. At Ocracoke Inlet, the famous pirate Blackbeard met defeat and death in 1718. Fabulous sums of gold bullion were said to be buried somewhere among the sand dunes of the islands.

"And they've started talking again," Pete mused, "about the ghost ship that run aground on Diamond Shoal."

"When was that?" John asked.

"About 1885," Pete guessed, and, in the simple language of the land, told us the story.

Thousands of dollars have been spent to stop the shifting sands. Brush fences and other man-made devices—and over 200 million plants—have been put in on the southern tip of the island chain in an effort to check the inexorable march of the land

Diamond Shoal lay off Cape Hatteras. One morning, it seems, members of the coast guard stationed there discovered a large sailing vessel grounded on the shoal, and figured it had run aground during the hours of darkness. The ship's sails were up, but she carried no flag. Launching a boat, a crew made its way out to the vessel, and receiving no answer to calls, climbed aboard. An examination of every hold and corner and cabin revealed that the ship was unoccupied, although from her flying jib boom to her Jacob's ladders she was spic and span. Even the table was set with clean china. All life boats were intact and there was no sign that any person had deserted the ship since its contact with the shoal. The only living creature aboard was a cat.

There is some old superstition of the sea that says the master of a vessel will sometimes change into a cat and sail his ghost ship on and on and on down the high sea lanes. Whether or not the coast guard crew was superstitious, Pete did not know. He said they reefed the sails and went ashore to check on this strange vessel. She was not listed. They made preparations to salvage her the next morning, but that night a violent squall blew up and when dawn broke the vessel was gone. As far as Pete knew, no one ever saw her again.

Those are the kind of stories they tell at Hatteras. They make your hair curl and you go on listening while the slow enchantment of the land creeps through you like languid fire.

The ferry came back. Under the influence of Pete's stories the wait had not seemed long. We crossed Oregon Inlet and took off again down the tongue of land that licked against the blue Atlantic. The road changed alternately from high sand dunes, piled one on top of the other, to wet sand flats. Less than twenty miles from Cape Hatteras, we deserted the dune road and took to "the wash," that narrow strip of sand that lies between high and low tide along the beach. The wash was as smooth as the top of a billiard table, and although Pete clipped away the miles with breath-taking regularity, he had time occasionally to take his eyes away from the beach and point to the outline of some wreck which had all but its nose buried in the sand. This sector of the islands had not been dubbed "the graveyard of the Atlantic" merely because of its ghostly loneliness.

We stopped to examine one of the skeleton hulks and John pointed out a flock of ducks that moved across the island toward Pamlico Sound. "Early for ducks, isn't it?" he asked.

"No, sir," Pete answered. "Ducks start early and come plentiful in these sounds." I knew the names of Pamlico, Albermarle and Currituck were names to kick up the heart action of any waterfowl gunner.

There were other kinds of birds, too. Overgrown herring gulls, in brown first-year suits, swaggered along the beach as though they owned the place, or hovered with the grace of a drifting cloud over the water. Least terns and their cousins from the caspian, royal and common tern tribe, flew singly or in groups beyond the breakers with their bills pointed downward toward the water, watch-

ing for minnows or food bits floating on the surface.

Although the nesting season of sea birds was long since past, I had been told that thousands of gulls and terns nest on Hatteras. Only the highest elevations of the sand dunes behind the wash are safe from abnormal tides, and to these elevations come birds each year to lay their eggs and rear their young. From the middle of May to mid-July, the air is filled with white ghosts that swing from the dunes out over the ocean and back again, feeding on the almost limitless supply of crabs and tiny fish.

On the highest strip of land, above the reaching fingers of the water, the eggs are laid and the downy young are hatched. The nest is an unrimmed hollow in the warm, dry sand and sea shell fragments, without lining of any kind. Both eggs and young are so similar to the mottled appearance of the high sand bank that human eyes must look closely to find them.

The least tern is one of the most common breeders of the *Laridae* family on Hatteras Island. They are said to be ardent parents. Mother birds have been known to stand for long periods to protect their young from the blistering sun on the beach. When storms drive roaring waves across the nesting sites, the parent birds will hover pathetically above their eggs or young as long as they survive.

The sand road, the only lane of travel down the islands, winds through the heart of the nesting area. Each year, before restrictions on travel, thousands of eggs and young birds were crushed under the wheels of automobiles. There was no means of determining the exact mortality of these birds, but it was high.

We spent the night under the shadow of Hatteras light, built in 1870, but long since abandoned for a modern lighthouse. Rooms were secured in the dwelling once used by the custodian of the light, and which had now been converted into a small hotel. In the evening some of the neighbors from several miles up the beach came over to sit on the porch and slap at mosquitoes while they told more yarns of the romantic islands.

They are proud of the sand dune fixation work on the islands, without knowing that this is perhaps the most photographed and most closely followed public works project on the Atlantic coast. They all know that the land itself is uncertain, unstable.

Some geologists say that the islands were formed during the last glacial period, when the Atlantic shoreline dropped fifty feet or more and left Pamlico Sound a sand and mud flat. The wind blew the sand out of this flat into massive dunes, which became islands when the ocean waves rolled in once more.

Thousands of gulls and terns nest at Hatteras—and from May to July the air is filled with white ghosts, winging over the dunes

Then the islands started moving inland. No one knows how long they have been crawling back into the sound with the tedious pace of a changing earth. Old-timers say that when Cape Hatteras Lighthouse was built three-quarters of a century ago it was more than a mile from the beach. Today, the waves break right at the feet of this massive stone ghost.

A vast amount of money and labor have been poured into the islands to stop the shifting sands. At the time of our visit several years ago we were told that more than 200,000,000 plants had

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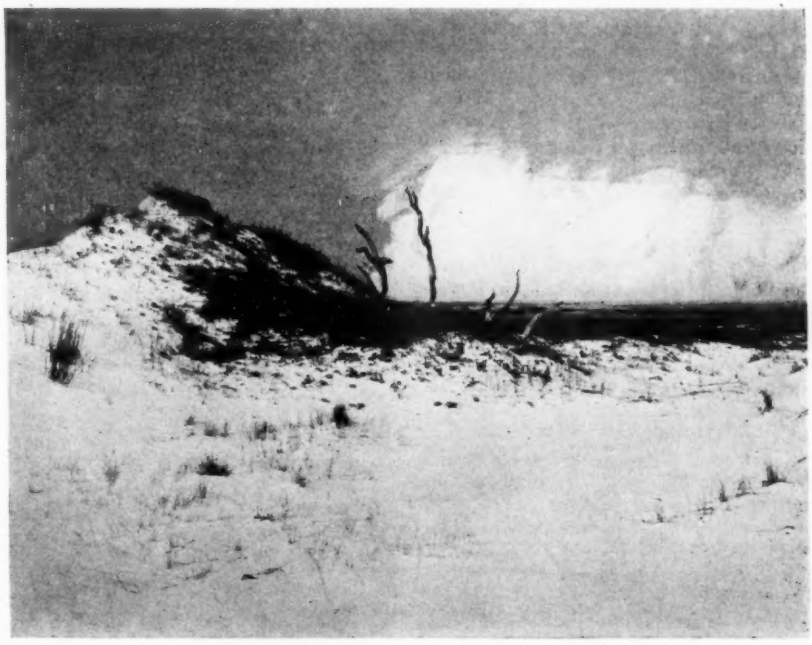

Vagaries of the wind shift the sands constantly, and the islands are said to be moving inland several feet a year

A Bad Actor is the Mountain Beaver — Buck-Toothed Destroyer of Trees

THE BOOMER—A WOODLAND TOJO

By ARTHUR W. PRIAULX

TIMBER growers along the West Coast have encountered some strange obstacles, but none have proved more perplexing, especially during the past few years, than the boomer, or mountain beaver. Foresters in charge of planting operations on burned-over land are finding a tough opponent in hordes of these strange little creatures, which are playing hob with plantations of young Douglas fir, spruce, hemlock and redwood. And, after many months of dealing with the boomer, they are asking—is it possible for an animal to take on the characteristics of a human?

For in appearance, this bad actor of the timberlands needs only the thick-lensed glasses to become a full brother of Tojo, the bad actor of the Asiatics. He has four large buck-teeth. When cornered he bares them in a disarming half smile. He is small as animals go, weighing between two and three pounds. And, he is covered with a thick hair, valuable only to the trapper who wishes to put another notch on his pest-shooting gun—just as our Jap-hunting soldiers do.

Tojo of the timberlands has dug in along an 800-mile stretch of the Pacific Coast in Oregon, Washington and California, and has extended his beachheads inland as much as a hundred miles. The very nature of his expansion and infiltration in the valuable timberlands of the West has paralleled the infiltration tactics of his human double. Japs for years smiled their way into the good graces and confidence of West Coast citizens, the while gathering data on our defenses and industry.

The boomer attacks larger trees by exposing roots and eating the bark

The boomer enjoyed similar disinterest. Predatory animal hunters killed off his natural enemies, until now in the vast, rich forests, scarcely a coyote exists. Mink and wildcats, his two most vicious enemies, are not present in sufficient numbers to keep him within bounds. He has the run of the woods, almost unmolested, and how he has taken full advantage of man's unintentioned good turn is just beginning to come to light.

Many forest land owners, who want to keep successive tree crops growing, have been engaged in planting by hand areas where fires have destroyed natural reproduction. Tiny year-old seedlings from private and state nurseries, succulent, green little fellows, destined someday to become giant, mature trees of the forests, were set out by planters.

In the winter months, the nocturnal

boomer would sally forth at night, following paths through the dry ferns which tree planters had obligingly made for him. The young seedlings from the nurseries seemed to offer the salad course to his regular diet of ferns and skunk cabbage, and so he went gleefully to work. With his buck-toothed nippers he promptly trimmed and pruned many seedlings.

The boomer, perhaps emboldened by the turn of events, has even been known to tackle from six to ten-year old trees. Sometimes, he'll burrow under a sizeable second growth, exposing the roots and cleaning off all the bark. Then, probably, he retires to his deep burrows —his bomb-proof shelters—out of man's reach, and smiles in his slow, moronic way at man's stupidity in tampering with nature's all-wise balance.

He has a fondness for Douglas fir, hemlock, spruce and redwood. Cedars, in all their species, are safe from boomer attack, for he has not yet taken a liking to this strongly incensed tree.

E. H. McDaniels, forester for the West Coast Lumbermen's Association at Portland, Oregon, was asked to explain the origin of the name "boomer." He says the little night-prowling rodent was called boomer because he was so "narrer" between the eyes. On the infrequent occasions when the boomer has been surprised up a tree in the late afternoons, he will freeze for hours, slowly turning over in what serves for his mind, what to do. "He probably would be classed as sub-moronic, if means of measuring his mental reactions were available," McDaniels avers. Stupid or moronic, the mountain beaver is a menace to many timberland owners. Scientists have politely named him *Aplodontia,* which sounds like a pretty good name for the likes of him.

One timberland owner brought down the wrath of cattlemen on his shoulders when he proposed that wildcats be allowed to breed because they might curtail some of the beaver's rabbit-like proclivities. Even though cattlemen are in the minority in the timber areas, the chances are that this suggestion will die at birth.

What to do about the boomer? To bring back the coyote or the wildcat is practically out of the question. Two other schools of thought for boomer control have been gaining favor among industrial foresters charged with the protection of young, growing forests. One school has been experimenting with poison, but without much success because the boomer is particular in his eating habits. Dipping young seedlings in poison has been tried and serves to keep off some browsing pests the first year, but when the new leaders and tiny limbs develop, they are poison-free and very palatable. Poisoned apples have been tried, but the boomer just isn't interested in new experiments in diet.

The other school of thought in boomer control, of which Leonard Wallulis, a forester with the Oregon State Board of Forestry, is an ardent exponent, is the trapping method. Wallulis, who has charge of the state-owned Hamlet forest plantation in Clatsop County, has been experimenting for years.

He says that one plantation made six years ago took a terrific beating from the boomers with as much as ninety per cent of the young seedlings being destroyed. Three years ago he made a planting on an adjoining burned area. This area was also the center of operations for a few regiments of boomers,

A young victim. Large areas of seedlings are ravished by this animal Tojo

and his survival was but forty percent.

Two years ago, on another adjoining area which he proposed to plant, he started an intensive trapping campaign. He took about 700 mountain beavers with ordinary steel traps. That winter he planted the area. His survival has been extraordinarily high, much over ninety percent.

The planting area was heavily covered with dead and dry ferns in the late fall, as is much of the Pacific slope open forest land. He had his crew of six women tree planters cover each tiny seedling lightly with the ferns. He claims, as does McDaniels, that boomers are stupid and will only take seedlings they can see, and are too dumb to dig under the fern. The year after the planting he again trapped the area and reported a good catch of the rodents, although greatly reduced from their original high population point.

Foresters tell many interesting sidelights about this little-known fellow who might become Public Enemy No. 1 for forest land owners. They tell of isolated attacks on single trees, hundreds of feet from known infested areas. Mountain beavers will pass up seedlings, which have grown naturally from seed, along their runways and go long distances to pick out a particular young tree. They may even pass up a seedling right in front of their burrow opening, going around it to get at one they have selected for their attention.

Another strange fact which Wallulis has uncovered in his study of the mountain beaver is that of all the rodents he has trapped, seventy-five percent are male. Whether this indicates that the males do the outdoor work, with the females running the show from the comparative safety of their bomb shelter, no one seems to know. The mortality rate of female boomers may be high, or the female of the *Aplodontia* may be just a necessary evil.

The buck-teeth of the boomer are powerful and dangerous if you get close to him. He will cut off a small tree an inch in diameter as neatly as though it were cut with a very sharp ax—and the mark is identical to that of an ax. His tiny head, small in proportion to his body, rests on an extra large and heavily muscled neck, which accounts for the powerful pressure he can exert with his buck-teeth.

The name mountain beaver is a double misnomer. This strang little rodent prefers the lowlands for his home burrows, particularly along the coast, and he doesn't like the water as the real beaver does, although he builds his burrows and long runways close by streams. Mountain beaver? No. Tojo of the timberland is a far better name for him.

It looks as though a firm and intensive control program, joined in by private forest owners and the state and federal governments, may be necessary to control the mountain beaver. His damage today is really extensive in young timber. If his numbers increase, more damage will certainly occur, and the little rodent may even extend his destructive campaign to older trees.

Trapping, if done on a large enough scale, may even eliminate him as a pest. There is no bounty on his head, and the utter worthlessness of his skin protects him from man's avariciousness which has all but removed the mink from his occupied areas.

Whatever the answer, the plain truth is that the mountain beaver, alias Tojo of the timberland, alias the boomer, alias *Aplodontia,* is causing headaches among tree growers in the West.

SOLVING THE LABOR SHORTAGE

Yankee Ingenuity Builds and Operates a One-Man Logging Railroad

By WALTER F. BRECKENRIDGE

YANKEE ingenuity in the person of Elbert M. Smith, seventy-eight-year-old East Lempster, New Hampshire, farmer, has solved the farm labor problem—at least in so far as logging is concerned. He has built a one-man logging railroad —527 feet and seven inches long from stump to logyard—and is clearing up a forty-acre tract of spruce, balsam fir and hardwood without either a tractor, horse or hired man to help him.

When war came, the government stressed the need for wood—wood for fuel as well as for defense purposes.

Elbert M. Smith, at seventy-eight, starts a balsam fir into war production

Time was hanging heavily on Mr. Smith's hands. He had just finished rebuilding his house, which is a combination store, postoffice and fire department, and had nothing to do but cultivate a vegetable garden, mow the lawn, get in his winter's wood, and perform the daily farm chores. To keep himself occupied, Mr. Smith decided to cut his forty-acre tract of woods and work up the logs for pulpwood, fence posts, firewood and other products.

Most of the woodland tract is a quivering peat bog, impassable to horses even when dry. The occasional elk that visited the swamp sank belly-deep in the mucky soil. Furthermore, the brook which courses through the hollow between the house and the woods stands two feet deep during rainy seasons. Under these conditions, local lumbermen who looked over the job said it was too tough for them. Nor was Mr. Smith able to locate a man or two to help him out, the farm labor situation being what it is. He decided, therefore, that the only solution to his problem was to do the job himself, single-handedly. And this he has done, even to building and operating his own logging railroad.

Picking a line down through his pasture, and utilizing whatever stumps and rocks that were in his way, he built a track, with about a two-foot clearance, of piling and cribbing. For rails he sawed out pieces of fir, two by five inches, and laid them on the cribbing edgewise. To hold the rails at a uniform width, and as a substitute for ties, he toe-nailed round poles to the rails near the lower side. The track goes down through the pasture, across the brook, and up a slight incline into the woods. Before the end of the year, Mr. Smith will have extended the track several hundred more feet.

The rolling stock—a single car—is also hand-made. Roller-bearing wheels were purchased at a Keene machine shop. An old hand-operated winch, salvaged out of a dump, furnishes power.

Set up at the road end and equipped with sufficient cable to haul the car up the incline, it enables Mr. Smith to bring at least a half a cord from the woods at one time. His entire outlay—car, railroad bed, and operating equipment—cost twenty-five dollars, plus plenty of brains and labor.

Last winter he managed to get some of his balsam fir cut by people who wanted the boughs to sell as Christmas evergreens. They paid around forty dollars for the boughs and left him the logs. All he had to do was get them out.

In winter Mr. Smith uses a hand-drawn sled to haul logs to the woods' end of the railroad. In summer he depends on a home-made two-wheeled hand truck. He handles logs with a cant hook and, if unusually heavy, a block and tackle is used to pull the loaded truck. Then he rolls the logs up skids and onto the car.

Pushing starts the loaded car on its roller-bearing wheels down the slight incline and around a curve—150 feet—to the brook. It even gains enough momentum for Mr. Smith to hop on and ride. Once across the brook, he attaches a cable, walks the rails to the winch up at the house, and starts winding. Each trip over the 527 feet and seven inches with a half-cord of wood takes about eight minutes. At the house, logs are rolled down a skidway and piled beside the track.

Once the car is unloaded, Mr. Smith can ride more than half the way back into the woods. He releases the brake on the winch, carefully removes the wedge from under a wheel, gives a slight push and jumps on. Gravity does the rest until the end of the cable is reached. Unhooking the cable, he then pushes the empty car along the winding rails and into the woods for another load.

Near the log deck at the house is another ingenious Smith gadget for bucking firewood into stove lengths. A small saw horse is mounted on two metal wheels that run on a track. Rolling a log onto the sawhorse, he "dogs" one end to keep it from moving and, as each piece is sawed off, pulls the log along far enough to allow another piece to be cut. As slight and agile as a school boy, seventy-eight-year-old Elbert M. Smith has proved that brains without too much brawn can generally do the trick.

(Top)—On this one-man set-up, chains fasten the logs to a two-wheeled home-made truck for hauling to the railroad car which, when loaded, is pushed down grade (center). For the up-grade pull (bottom) a winch is used

Mounted male specimen of "Three Toes"—collie cross. Halfbreeds often proved more savage than pureblooded wolves

WHAT WAS THE EARLY INDIAN DOG?

New Light on an Age-Old Riddle Points to a Strong Wolf Strain Over Many Centuries

By STANLEY P. YOUNG

In the December issue, Mr. Young pictured the true "Indian dog" as a descendant of European dog families brought to this continent from Asia by way of Alaska by followers of the red Mongoloids, first people of North America. By the middle of the eighteenth century, however, so much interbreeding had taken place between the Indian dog and wolves and coyotes that the prehistoric animal had all but lost its identity. Eyewitness accounts of these dogs of the Indian, beginning with Coronado in 1541, and the various uses they were put to, were given by Mr. Young in his first article. Here he resumes his story with more interesting observations, some of which cast new light on the still debated dog-wolf relationship.—Editor.

WHILE in Alaska during the summer of 1938, I was informed that because of the great endurance of the wolf, enabling it to overtake almost any animal, the Eskimos will at times cross it with their dogs. The late Dr. E. W. Nelson was also given this information by the natives and wrote "This is not surprising when the close resemblance between some of the dogs and a wolf is noted, and one can easily believe that such crosses are fertile."

Dr. Nelson also confirmed that wolves were used by the Eskimos to haul sledges. "The Eskimos sometimes secure the cubs (wolf), and some years ago an old Eskimo near St. Michaels secured several, which he kept until winter and broke them to haul his sledge," he wrote. "They worked well,

but became so vicious that they were killed."

Referring to the entire Canadian Arctic, Soper in a recent article observed that some Eskimo dogs exhibit a startling similarity to the wolf, "and in the hills have been so mistaken on more than one occasion. For this reason sled dogs have been shot in error repeatedly." The "typical" whitish Eskimo dog on Baffin Island, he declared, may be regarded almost a rarity. "Very few are encountered in relation to total population. In one case which came to the writer's attention in Foxe Peninsula, the whitish animal was said by the Eskimos to have had a white Arctic wolf as a sire." According to native assertions, said Soper, "promiscuous mating with wolves appears to be a more or less regular, though not a frequent, occurrence."

Richardson, in his *Fauna Boreali-Americana*, states: "In Captain Parry's and Captain Franklin's narratives, instances are recorded of the female wolves associating with the domestic dog . . . the Indians endeavor to improve their sledge dogs by crossing the breed with wolves. The resemblance between the northern wolves and the domestic dog of the Indians is so great that the size and strength of the wolf seems to be the only difference. I have more than once mistaken a band of wolves for the dogs of a party of Indians, and the howl of the animals of both species is prolonged so exactly in the same key that even the practiced ear of an Indian fails at times to discriminate them." Richardson further made this observation: "The offspring of the wolf and Indian dog are prolific, and are prized by the voyagers as beasts of draught, being stronger than the ordinary dog."

The real Labrador dog, relates Grenfell, is a very slightly modified wolf. "The general resemblance to wolves is so great that at Davis Inlet, where wolves come out frequently in winter, the factor has seen his team mixed with a pack of wolves on the beach in front of the door, and yet could not shoot, being unable to distinguish one from the other. The wolves themselves are larger than the dogs. They may measure in length as much as seven feet, eight inches, from nose to tail. They are very bold; on one occasion wolves lurked around a solitary house in Big Bay till they had carried off the four dogs, one by one, and left only after capturing the cat."

Comparing the Labrador dog with the wolf, Grenfell had this to say: "A good specimen (dog) stands two feet, six inches, or even two feet, eight inches, high at the shoulder, measures over six feet, six inches, from the tip of the nose to the tip of the tail, and will scale a hundred pounds. The hair is thick and straight; on the neck it may be six inches in length. The ears are pointed and stand directly up. The appearance generally is that of a magnified Pomeranian. The legs look short, compared with the massive body. The eyes are Japanese, and give the animal a foxy look about the face. The large bushy tail curves completely over on to the back, and is always carried erect. The colour is generally tawny, like that of a gray wolf, with no distinctive markings but a beautiful black and white breed has grown up, and furnishes the handsomest dogs. . . .

"The Labrador wolf has never been known to kill a man. Yet on several occasions single men have fallen in with them. One man told me that a pack followed him almost to his own door, that they stopped when he stopped, and came as close as ten yards. He had no gun and no means of defense, yet they never touched him.

The female halfbreed Dr. Foreman bred through four generations

"The wolf will track a deer day after day till he captures it. Again and again our trappers have seen evidence of the indefatigable zeal and indomitable resolution of a single wolf in following a caribou herd; and observers all agree that each time the track spells the shadow of death. A settler told me the story of a doe caribou which, in the early summer of 1906, he saw brought to bay on the middle of a pond by a single wolf. The ice had thawed out, and it was necessary for the wolf to swim off to get at the deer. The wolf, after long hesitation in taking to the water, which it apparently hates, swam off, fought the caribou, and though repeatedly knocked down by her forehoofs, at last pulled her down."

Speaking of the Labrador dog, he noted a wolfish trait. "To feed its puppies," he observed, "a dog will vomit the food it has eaten itself." Few animals can equal the Labrador dog for endurance, Grenfell said, relating that at fifty degrees below zero "a dog will lie out on the ice and sleep without danger of frostbite. He may climb out of the sea with ice forming all over his fur, but he seems not to mind one iota. I have seen his breath freeze so over his face that he had to rub the coating off his eyes with his paws to enable him to see the track. I have driven him from daylight to dark on bright spring days, when a

The male wolf-collie halfbreed was wild, could not be tamed. The Indians probably disposed of such intractable animals

couple of hours of such exposure would blind the unprotected eyes of most men. I have never yet known a dog's eyes to suffer at all.

"The Eskimo dog never barks. But he howls exactly like a wolf, in sitting posture with the head upturned. One dog will start every dog in earshot. This keeps a traveller awake, and so the people have invented many charms, one of which consists in seizing the band of your shirt in your teeth and chewing it till the noise stops."

John McLean, who entered the service of the Hudson's Bay Company in the winter of 1820-1821, and continued in its service for the following twenty-five years, states: "The Esquimaux breed of dogs are wolves in a domesticated state, the same in every characteristic, save such differences as may be expected to result from their relative conditions; the dog howls, never barks."

Old "Three Toes," famous Colorado wolf, after her capture in 1923

Lascelles, in discussing the lack of a true bark on the part of the northern husky, had this to say: "The reason, no doubt, can be ascribed to their close ancestry to the wolf, who never barks. It seems to be a fact that when two closely related species are crossed, the progeny, irrespective of sex, inherit the voice of the father; the husky, as a breed, is the cross between a male wolf and a female domestic dog of questionable ancestry. If this explanation is correct, the progeny would bark if the original cross were reversed. A mule is a cross between a male donkey and a female horse. The progeny brays like a donkey. A jennet is a cross between a male horse and a female donkey. The progeny neighs like a horse. True huskies, through years of straight breeding, still resemble the ancestral father more than the original mother. The same applies to the mule, whose appearance is more like a donkey than a horse, and the jennet, who resembles a horse (more) than (it does) a donkey."

But coming back to our own western plains, Colonel Theodore Roosevelt wrote of an "instance in which a wolf struck up an extraordinary friendship with a stray dog, and the two lived and hunted together for many months, being frequently seen by the settlers of the locality. This occurred near Thompson's Falls, Montana.

"On another neighboring ranch there is a most ill-favored hybrid, whose mother was a Newfoundland and whose father was a large wolf. It is stoutly built, with erect ears, pointed muzzle, rather short head, short bushy tail, and of brindled color; funnily enough it looks more like a hyena than like either of its parents. It is familiar with people and a good cattle dog, but rather treacherous; it both barks and howls.

"The parent wolf carried on a long courtship with the Newfoundland. He came round the ranch, regularly and boldly, every night, and she would at once go out to him. In the daylight he would lie hid in the bushes at some little distance. Once or twice his hiding place was discovered and then the men would amuse themselves by setting the Newfoundland on him. She would make at him with great apparent ferocity; but when they were a good way from the men he would turn around and wait for her and they would go romping off together."

Commenting on the wolf and the domestic dog, Pocock observed: "They have been repeatedly crossed and produce fertile offspring. All evidence points to the conclusion that the wolf was the main stock whence our domesticated breeds were derived."

What may commonly have been the case of frequent breeding between wolves and dogs in our western country is vividly portrayed by a wolf-dog breeding that took place in the wild in Colorado during the early winter of 1923. For a number of years wolves had been existent in the country north of Thatcher, forty miles east of Trinidad, in what is locally known as the Butler Pasture, a large, fenced stock-grazing area that extends nearly to Pueblo. Owing to persistent trapping operations, as a result of stock depredations, thirty-two wolves were taken in time from this and adjacent ranges.

As far as could be determined, but one wolf remained. This particular wolf was a female, dubbed by the stock interests as "Old Three Toes" because of her loss by trap injury of three toes on her left front foot, and she ranged the territory around the Apishapa River in Los Animas County. She was easily identified by the absence of the missing toes on her left front foot whenever she stepped into soft earth while traveling her runway, or when she killed her prey where the ground was of a consistency to leave good imprints of her track.

It was believed that this wolf was the lifelong mate of an old male white wolf —"Old Whitey" of Bear Springs Mesa— that had been eliminated from these ranges some time previously. With the disappearance of this old male, Three Toes returned to Apishapa County and became what is commonly termed the "lone wolf" in the parlance of the western stockmen. She carried on with much depredating of livestock, particularly on the young cattle owned by Monroe Brothers and Henerson, stockmen whose headquarters ranch was located eleven miles northwest of Thatcher.

In late December, 1922, Monroe Brothers and Henerson owned a graded male collie dog—an all-around ranch dog and pet. During the early evenings, Three Toes began to visit the ranch headquarters, and particularly a little knoll rising to the rear of the main ranch buildings. From this eminence she would utter howl after howl, which was answered by the bark of the collie. One night the collie disappeared, returning in the morning; but from this interval on it made nightly trips away from the ranch. It would sometimes be gone several days at a time. The stockmen began to suspect that their collie dog was being enticed away by this lone female wolf. Therefore, to keep the dog at home, it was finally confined to a chicken yard runway.

During the time of the dog's confinement, Three Toes rarely missed a night in appearing on the knoll at the rear of the ranch buildings, where she continued to emit howls. One night she visited the runway. Tell-tale evidence the next morning showed that while the wolf dug a hole under the board holding the chicken wire from the outside, the collie did likewise from the inside. Between them, they dug a hole large enough to permit the collie's escape.

The collie never returned to the ranch home, as had been the case on previous disappearances before it was penned up. As every known means was being employed to kill this wolf, poison stations were among the schemes resorted to. Three weeks after the dog's disappearance it was found dead near one of these stations, having eaten several poisoned meat baits. Tracks visible at this point showed that Three Toes had been with the dog, but had avoided eating the bait. Nothing was seen of her again until the night of June 8, 1923, when she returned with five whelps to the Monroe Brothers and Henerson's ranch, and killed six of their young calves. She was trapped on June 11, and the latter part of that

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Forest Appraisal Project Is Launched

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EASTERN HOPHORNBEAM

***Ostrya virginiana*, (Miller) Koch**

By G. H. COLLINGWOOD

THE Eastern hophornbeam is a small, shapely tree with bark of narrow scales and a broad head of slender branches. It is seldom found in large groups but usually grows scattered singly on well-trained gravelly ridges and slopes in the shade of oaks, maples, and other larger trees. It is found from Nova Scotia westward through southern Canada to the lower slopes of the Black Hills of South Dakota in all the eastern states from the Atlantic to Nebraska, eastern Kansas and east Texas. It also extends to the highlands of southern Mexico and Guatemala. It is most abundant and reaches its largest size in Arkansas and Texas.

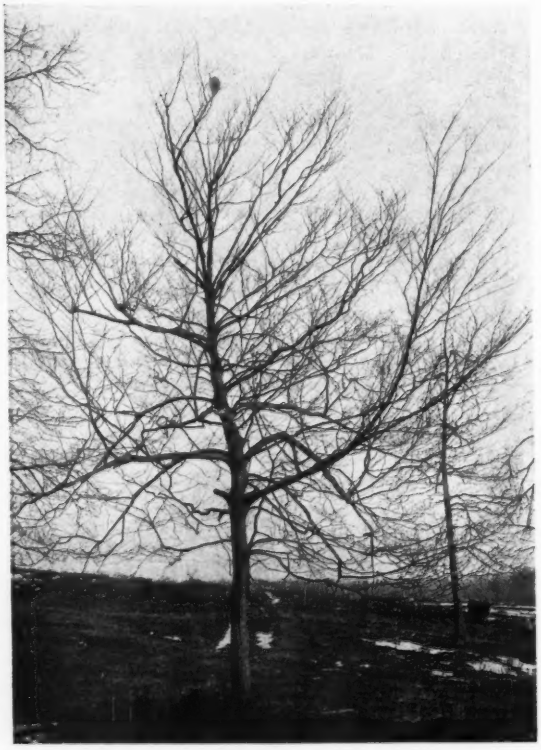
Eastern Hophornbeam is a small tree with long, spreading branches that form an irregular, broad crown, often as broad as high

The Eastern hophornbeam tree is usually not more than thirty feet tall with a short trunk eighteen or twenty inches in diameter, but occasionally is fifty or sixty feet tall with a trunk nearly two feet in diameter. In most cases it develops a broad top, sometimes as much as fifty feet across, of many small spreading branches, the lower ones sometimes drooping, but with the branchlets tending upward. Twigs and branches are so tough that they are rarely injured by wind.

Though easily mistaken for young elm, this hophornbeam is one of four species belonging to the *Ostrya* group of the family *Betulaceae*. It is the more widely known of the two species that are native to North America. The single other American hornbeam is limited to the southern slopes of the Colorado River canyon about seventy miles north of Flagstaff, Arizona. The common name comes from its fruit, which closely resembles that of the common hop-vine, and from its wood, which has a horny texture. *Ostrya* is the classical name of this tree and is from the Greek meaning a kind of tree with hard wood.

The leaves, three to five inches long and one and a half to two inches wide, are alternate and have short, slender, hairy stems. They are egg-shaped in general, with more or less rounded or slightly heart-shaped bases, tapering pointed tips, and irregularly saw-toothed margins. When full grown the leaves are thin and extremely tough, with the upper surface dark yellow-green and the lower surface pale yellow-green. Prominent on the under side are the light yellow, slender, hairy midrib and the numerous parallel, slender, primary veins. In the autumn the leaves turn a clear yellow.

During most of the year the twigs are tipped with slender, cylindrical buds of the staminate or pollen-bearing catkins, which are about one-half inch in length. These develop in April and May at the same time as the leaves, becoming about two inches long, loose and drooping. The pistillate flowers are slender, pendent catkins about one-quarter inch long with thin hairy stems and pale green or reddish leaf-like scales. The hop-like fruit is one to two inches long,



Eastern Hophornbeam is a tree of high, dry ridges with scaly bark, long slender branches, and very tough, upturned branchlets

The leaves are thin, papery and tough, turning pale yellow in autumn, while the bladder-like scales of the fruit are pale green or reddish

Pendant staminate catkins, green tinged with red and about two inches long, develop in April or May to fertilize the pistillate catkins growing from the sides of the twigs

Bark of Eastern Hophornbeam is thin, flaky and grayish brown broken into flat scales that are loose at the ends

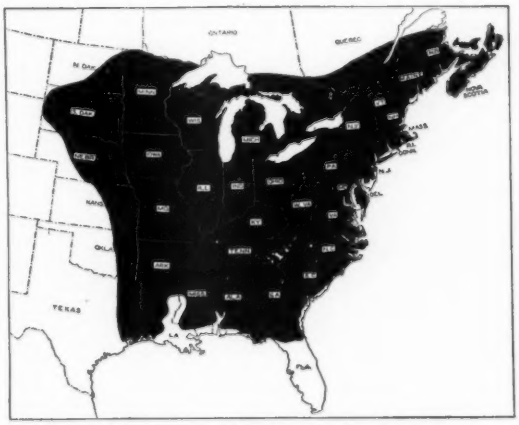
two-thirds of an inch to one inch wide and borne on a short, slender, hairy stem. It consists of a number of small sacs each containing a little flat nut about a third of an inch long.

The light chestnut-brown winter buds are a quarter inch long and slightly hairy. No terminal buds are formed and the branches lengthen from upper lateral buds. The slender, light green twigs turn a shiny light orange by midsummer. Retaining their luster, they become red-brown during the first winter and gradually grow darker brown with age.

The bark on the trunk is about a quarter inch thick, grayish brown, and rough with narrow elongated plate-like scales.

The strong, hard wood is light brown tinged with red, with an outer layer of nearly white sapwood a few inches wide. It is tough, close-grained, and heavy, a cubic foot weighing 52 pounds when dry, is durable in contact with the soil but, while it is capable of taking a fine polish, it commands no special attention in commerce. The trees are so small and scattering as to have no place in lumber records. The wood is used largely for fence posts, tool handles, mallets and other small articles which demand hardness and strength.

The eastern hophornbeam is a slow-growing tree that can easily be raised from seed. The seeds usually take two years to germinate after they are planted. A very hardy tree, it is not seriously injured by disease, rots, or insect enemies.



Natural range of Eastern Hophornbeam

What Was the Early Indian Dog?

(*From page 28*)

month two of the whelps were roped from horseback by Roy Spangler, a Fish and Wildlife Service predatory animal hunter. These whelps, a male and a female, were about two and a half months old. By August, Spangler roped and trapped three more of the whelps, and so far as could be determined this number completed the entire litter.

Three Toes in all probability was coming into the rutting period at the time she began her periodic visits to the ranch. These visits increased until they became nightly. Then came the visit of the wolf to the chicken-wired pen, and the eventual escape of the collie. From all evidence, the actual breeding took place at this time, about the middle of January, 1923. Three Toes must have whelped in late March, judging from the size of the offspring Spangler roped in June.

The male whelp that Spangler first roped was killed in November. It was predominantly black, and showed the wolf strain particularly. The female whelp was very reddish, and definitely showed the collie strain, but the typical collie reddish coloration of its pelt had a somewhat grayish aspect, as much of the guard hair was tipped with gray. Her muzzle and ears were very wolf-like.

The female wolf-collie whelp was turned over to Dr. E. J. Foreman, veterinarian of Trinidad, for experiments in breeding. Dr. Foreman kept this animal in his kennels for approximately two years, during which time it was bred twice with dogs. On February 14, 1927, he communicated with the U. S. Fish and Wildlife Service as follows: "The halfbreed (wolf) died of rabies on the day she would have whelped her second litter. As she breathed her last, I removed from her through the abdomen six puppies that I hand fed and endeavored to raise. They all died, however, within four days. . . . Her puppy, then a year old, that I had kept from her first litter sired by an airedale, was given the rabies treatment, as it had been running with her up to her death. I kept it until it was two years old. It was a large, powerfully built animal with standing ears and a rough gray coat. It was of a kind disposition, but always suspicious and not easy to approach.

"Roy Spangler took it out with him to use on the trap line, but it never became so that he could make any use of it as it would not fight coyotes. It got away from him finally and he could not catch it. A rancher ran onto it . . . and roped it . . . and I kept it for some time."

Dr. Foreman eventually sold the animal, but not before mating him to a purebred German shepherd or police dog. "I think there were six pups," he reported, "all of which were beautiful animals and of exceptionally kind and affectionate dispositions. I have one of these animals, a female. It has a very wolfish head, sharp standing ears, with a coarse wolfish coat and wolfish feet and legs. She has the wolf trot and prefers to lie out in the open corral on cold days and nights rather than go inside a shed that is always open to her. She has a very keen nose and is inclined to be a hunter."

Thus it is apparent that, as Dr. E. W. Nelson stated in 1887, commenting on wolf-dog interbreeding, "one can easily believe such crosses are fertile." Dr. Foreman's experiments definitely proceeded through three generations of successful breeding from the original Three Toes wolf and the collie dog mating.

It is evident, therefore, that the plains Indians of North America had many dogs of varying degrees of wolf blood. Undoubtedly this mixing of Indian dogs and wolves, as the records prove, was in process for many years prior to the advent of white men. That it continued for some time after this is also evident, according to some of the early journals descriptive of the country. Wolves taken while young in the wild and brought to the Indian camps, if they did not prove docile, were no doubt dispatched. Experiments with wolves held in captivity have shown that in each litter there are two or three whelps that early show tameness; the remainder are absolutely intractable and often die if attempts are made to train them.

Experimentation has tended to show that the halfbreed offspring of such unions, however, as between male dogs of the large breed and female wolves, appear to inherit all the wild characteristics of the female mother and seem to be more savage and intractable to raise in captivity than pureblooded wolves, even when taken equally young. There are exceptions to this, of course, which make likely the possibility that through the years a number of sufficiently docile and tractable crossbreeds, which could be tolerated in any Indian camp, might be obtained by elimination. The early records make it apparent that the so-called Indian dog of the eighteenth and nineteenth centuries was far from being the quiet creature of our average modern-day "Fido."

Other breeding experiments with dogs

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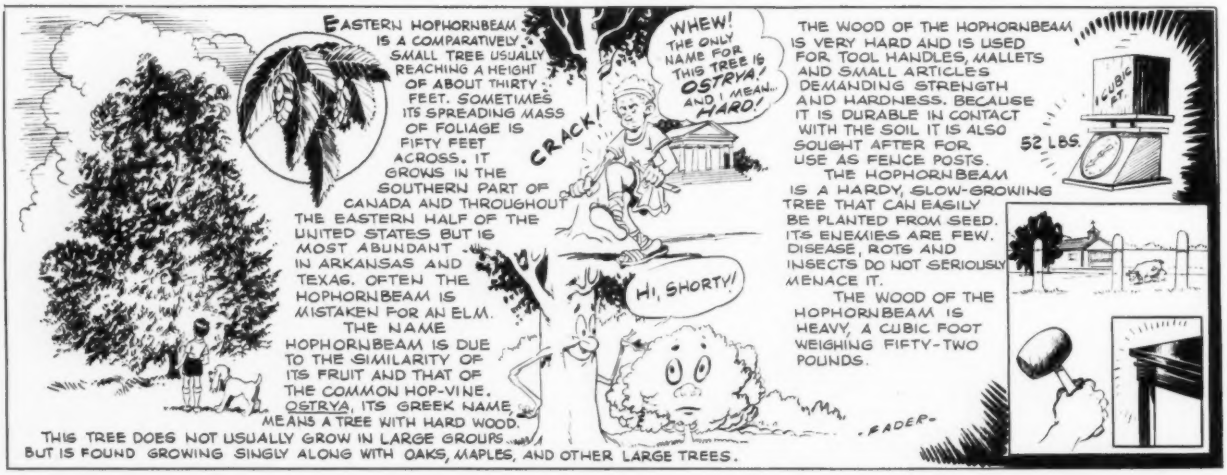
TREES AND THEIR USES—No. 81—EASTERN HOPHORNBEAM



CONSERVATION IN CONGRESS

THE bill (S. 45) to amend the Clarke-McNary law by increasing the authorization for expenditures for cooperative forest fire protection from $2,500,000 to $9,000,000 a year, was reported favorably by the House Committee on Agriculture on December 10 with provisions that appropriations be authorized as follows: $6,300,000 for the fiscal year ending June 30, 1945; $7,300,000 for the fiscal year ending June 30, 1946; and $8,300,000 for the fiscal year ending June 30, 1947. Since the Senate has already passed the bill as originally introduced by Senator McNary of Oregon, the amendment as approved by the House must be concurred in by the Senate before it goes to the President for signature.

In hearings held before the House Committee early in December, Chief Forester Lyle Watts of the Forest Service testified that a total of $18,000,000 was necessary to properly protect the forests of the country from fire. Representatives of The American Forestry Association, the Association of State Foresters and various lumber trade associations testified in favor of the bill.

Following hearings on H. R. 1465 to authorize unlimited appropriations for the completion of the national survey of forest resources, begun by the Forest Service more than a decade ago, Representative Randolph of West Virginia withdrew the bill and introduced a new one, H. R. 3848, limiting authorization for appropriations to $750,000 a year for continuation of the survey and $250,000 a year for maintaining the work already done—the total authorization not to exceed $6,500,000. No Senate action has as yet been taken on the new bill.

Hearings were also held on S. 250 and its companion bill, H. R. 1621, to promote sustained-yield forest management. The objective of this bill is to enable the Forest Service and the Department of the Interior individually or jointly to cooperate with private owners in setting up sustained yield units involving both public and privately owned timber. Later, on December 15, the Committee acted favorably on the bill, which passed the Senate on July 8, but amended Section 10 limiting special appropriations for work under it not to exceed $150,000 for the Department of Agriculture and $50,000 for the Department of the Interior annually, but authorizing each department to make expenditures from its regular appropriations for protection or management for the purposes of the act. Senate concurrence is necessary in this amendment before the bill can go to the President for signature.

On November 24, the House passed H. R. 3687, the general tax bill, without acting on the recommendations of the Forest Industries Committe to amend the Internal Revenue Code to correct inequalities in federal income and capital gains taxes on timber (See Editorial, November issue, AMERICAN FORESTS). On December 3 a hearing on this matter was held by the Senate Finance Committee. On December 14 the committee reported favorably on part of the proposal. If the Senate as a whole favors it, it will go back to the House for reconsideration.

The only other Senate action of particular importance involving conservation items was on H. R. 3598—First Supplemental National Defense Appropriation bill. This bill, which passed the House on November 5 was amended by the Senate on December 8. In so doing, it restored $4,100,000 of the $7,500,000 supplemental appropriation for the Forest Service's guayule rubber growing project, which had been eliminated by the House. This sum, however, was stricken out by the conference committee on the disagreeing votes of the two Houses, so the bill when finally approved will carry no funds for the growing of guayule other than those provided in the regular Department of Agriculture Appropriation Act. (Representative Anderson's proposal for an investigation of the guayule rubber situation erroneously reported as H. R. 364 in one place in the December issue, should have read H. Res. 346.)

Representative Barrett's bill, H. R. 2241, to abolish the Jackson Hole National Monument established by Presidential Proclamation in March 1943, was endorsed by the House Committee on Public Lands on December 17. It is not expected that this action will settle either the controversy over Jackson Hole or the whole question of further extension of national monuments. Two bills are now in the House and one in the Senate which would repeal the clause in the Antiquities Act under which the President may create national monuments.

CONSERVATION CALENDAR

Important Bills in Congress With Action—November 11-December 18, 1943

Bills Enacted

H. R. 2641—ELLIOTT—To authorize the acquisition by exchange of certain lands for addition to the Sequoia National Park. Passed House November 15, 1943. Passed Senate December 9, 1943. Presented to the President for signature December 15, 1943.

H. R. 3598—CANNON, Missouri—Making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1944, and for prior fiscal years, to provide supplemental appropriations for the fiscal year ending June 30, 1944. Passed House November 9, 1943. Passed Senate amended December 8, 1943. Conference report agreed to in House and Senate—December 18, 1943.

Forestry

S. 45—MCNARY—To further amend section 3 of the Clarke-McNary Law, providing for forest perpetuation and extension by increasing the annual authorization therefor and extending aid in combating tree insects and diseases. Passed Senate July 3, 1943. Reported with an amendment (No. 947) by the House Committee on Agriculture December 10, 1943.

S. 250—MCNARY—To promote sustained-yield forest management. Passed Senate July 8, 1943. Reported with an amendment (No. 960) by the House Committee on Agriculture December 16, 1943.

National Monuments

H. R. 3864—DIMOND (H. R. 3884—Chenoweth)—To repeal section 2 of the act entitled "An Act for the preservation of American antiquities." Introduced December 17, 1943 and referred to the Committee on the Public Lands.

Public Domain

H. R. 2697—PETERSON, Florida—To provide for the disposal of materials or resources on the public lands of the United States which are under the exclusive jurisdiction of the Secretary of the Interior. Passed House October 18, 1943. Reported with amendments (No. 596) by the Senate Committee on Public Lands and Surveys December 13, 1943.

Research

H. R. 3848—RANDOLPH—To amend section 9 of the Act of May 22, 1928, authorizing and directing a national survey of forest resources. Introduced December 15, 1943. Reported without amendment (No. 966) by the House Committee on Agriculture December 17, 1943.

Bill to Extend Federal Control Over Wildlife Withdrawn

EARLY in December, Senator Pat McCarran of Nevada announced withdrawal of support of his own bill (S. 1152) to extend federal control over wildlife (page 410 August issue). This came after opposition by conservation groups, many of whom believed the bill would open the way for commercialization of game resources.

In announcing his withdrawal, the Senator said: "Prior to my introducing this bill, uncontroverted evidence was presented to the Senate Committee on Public Lands that an over-population of wildlife existed on many areas in the public land states. It came from numerous sources, including livestock associations and federal bureaus. This overpopulation was having serious results for the game and in some localities was causing destruction of plant life and threatening dangerous soil erosion. The situation called for corrective measures, but it was being used as an argument for extension of federal control over wildlife. There was danger that it would serve as an excuse for executive orders or administrative directives expanding federal jurisdiction over the public domain, or over wildlife, or otherwise interfering with state rights.

"Senate Bill 1152 was introduced to bring the situation to public attention. Through its introduction and consideration, including a number of public hearings, several results have been accomplished. Public sentiment against increased federal control of wildlife has been aroused to such an extent that any executive action along such lines now seems unlikely. Substantial cooperation between individual states and the federal government has been achieved. Some state legislation on the general subject has been enacted. Both state and federal agencies have been led to a more rational consideration of the intricate problem of the proper use of the open public domain. Largely through cooperation reductions have been accomplished in excessive wildlife populations.

"Therefore, the major purposes for which the bill was introduced have been achieved. With its purposes accomplished, S. 1152 will be tabled, and I do not plan introduction of any other legislation on this subject."

Government Blamed for Lumber Production Decline

TESTIMONY that the government's failure to create proper conditions for increased lumber production is largely responsible for decline in output of southern pine, highlighted the New Orleans hearings on November 29 before the Patman Committee on Small Business of the House of Representatives.

Chief witness for the lumber industry was C. C. Sheppard, chairman of the Southern Pine War Committee. "Southern pine," he said, "is a critical war material. The government recognizes this, so does the industry. The government's recognition has been only partial and slow in coming; the industry's recognition was immediate and continuous. Industry recognizes government's preoccupation with over-all problems of which lumber is only one, but government has not given enough consideration to industry's problem. The government has brought some of its problems to us, and we have acted immediately and to the extent of our ability. We have brought our problems to the government, and it has delayed and delayed. We have constantly informed the government that we need manpower, equipment, and adequate economic returns, but our manpower, equipment, and economic stability are diminishing.

"If the government wants men in the shipyards and takes them awav from sawmills that is its responsibility. If trucks, tires, and equipment are to be given to others than the lumber industry, government must accept the resulting decreases in lumber production. Regardless of these handicaps, the industry will produce every foot of lumber that it possibly can, but the government must indicate fearlessly and plainly who is to get this lumber in order of preference."

Discussing lumber production as a whole, T. Philip Boyd, director of the WPB Lumber Products Division, made the following significant statement: "Taking the lumber industry of the entire country, production in 1943 will not be more than ten percent below last year. During the first World War years —1916 to 1918—lumber production for the country dropped twenty percent. Largest decline is in the South. The distribution job in the South is not so good as in other lumber sections and it has been deteriorating for the last few months. The blame for this is shared by the WPB and by the industry."

George Drake Heads Western Forestry Group

GEORGE DRAKE of Shelton, Washington, an outstanding leader in the forestry field, was elected president of the Western Forestry and Conservation Association at its thirty-fourth annual policy and practice conference at Portland, Oregon, on December 16 and 17. He succeeds George F. Jewett.

A highlight of the conference was a forceful analysis by Governor Earl Snell of Oregon of the state's responsibility for post-war forestry planning. The chief forester of British Columbia, C. D. Orchard, discussed problems of land management continuity under the Crown lease system; Clyde S. Martin, chairman of the Puget Sound Section, outlined that section's proposal for Society of American Foresters leadership in afterwar planning.

Outstanding among topics for general discussion was that of negotiation of joint management sustained yield agreements. Earl Klehm, supervisor of the Kootenai National Forest, Montana, presented the topic. E. I. Kotok, assistant chief, U. S. Forest Service, Washington, D. C., C. Otto Lindh, of the Portland regional office, Stuart Moir of the Western Pine Association, Paul Neils of Portland, E. H. McNaughton, Portland banker, and others enlivened this forum, under the able chairmanship of W. H. Horning, of the O. & C. Lands Administration. Strong support was evidenced for the pending Senate Bill 250 which would make such agreements a part of Forest Service policy.

State foresters from three western states and key members of the U. S. Forest Service conducted a panel discussion of federal distribution of cooperative fire protection funds. Progress reports dealt with "Keep Green" campaigns and industry tree farm movements. A day was given over to forest protection techniques under the chairmanship of Charles S. Cowan.

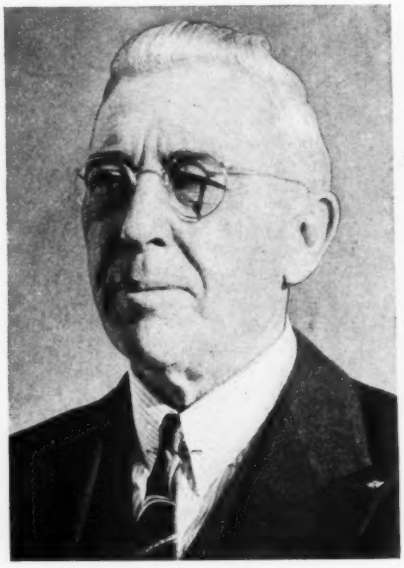
After many years of unselfish service as president, George F. Jewett insisted upon being relieved and his resignation was regretfully accepted.

Vice-Presidents named are: W. C. Lubrecht, Missoula, Montana; E. C. Rettig, Lewiston, Idaho; C. B. Sanderson, Seattle; Kenneth Walker, Westwood, California; E. B. Tanner, Portland.

Clyde S. Martin, Tacoma, was reelected secretary and Charles S. Cowan of Seattle, was named to serve another year as treasurer. The new Board of Trustees includes: Edmund Haves, Cottage Grove; Corydon Wagner, Tacoma; R. A. Colgan, Chico, California; George F. Jewett, Coeur d'Alene, Idaho: and Walter Neils, Libby, Montana.

New Regional Foresters Appointed by Forest Service

APPOINTMENT of John W. Spencer as regional forester for the Rocky Mountain Region, with headquarters at Denver, Colorado, and of William B. Rice as regional forester for the Intermountain Region, with headquarters at Ogden, Utah, has been announced by the United States Forest Service. Mr. Spencer succeeds Allen S. Peck and Mr. Rice succeeds C. N. Woods, both of whom retired from active duty at the end of the year.



John W. Spencer

William B. Rice

Associated with the Forest Service for more than thirty years, Mr. Spencer, since 1941, has been assistant regional forester in charge of timber management. Prior to that he was in charge of recreation and lands for the region, first serving in various capacities, including several years as supervisor of the Bighorn National Forest in Wyoming, on the national forests of the region. A native of Kansas, Mr. Spencer received his Master's degree in forestry from Yale University.

Mr. Rice also has been associated with the Forest Service for more than thirty years, serving as associate regional forester for the Intermountain Region since 1939. A native of Ohio, he was graduated from the College of Emporia in Kansas in 1910, and received his Master's degree in forestry from Yale University in 1912. Beginning his Forest Service career as a forest assistant in Idaho, he has served as supervisor of the Weiser and Payette national forests, in timber survey and general land classification work and as assistant forester in charge of timber management.

Forest Appraisal Project Is Launched

(*From page* 29)

Stringham, Berkeley, California; Lenore Suder, Chicago, Illinois; Sutherland & Innis Company, New York City.

Mrs. H. C. Tate, Westport, Connecticut; Lt. Frank J. Tezky, Camp Breckinridge, Kentucky; Thilmany Pulp and Paper Company, Kaukauna, Wisconsin; R. E. Tomlinson, Montclair, New Jersey; Horace B. Tuttle, Cleveland, Ohio; S. S. Visher, Bloomington, Indiana.

John Paul Wagner, Waukegan, Illinois; Frederick R. Walker, New York City; Willets G. Wanzer, Pacific Grove, California; Mrs. James J. Waring, Denver, Colorado; Earl V. Welton, Deer Lodge, Montana; Western Pine Association, Portland, Oregon; Weyerhaeuser Timber Company, Tacoma, Washington; Whaley Lumber and Construction Company, Troy, Alabama; Mrs. Frederick S. Wheeler, New York City; Elizabeth C. White, Whitesbog, New Jersey; Max Wieczorek, Los Angeles, California; W. O. Wiley, New York City; Orme Wilson, Washington, D. C.; Charles V. Winn, Pasadena, California; W. G. Winters, Houston, Texas; Hannah Woodman, Portland, Maine; Mrs. Ernest L. Woodward, LeRoy, New York; John S. Wright, Indianapolis, Indiana; E. N. Wriston, Prosperity, West Virginia.

F. J. Zeithamel, Jr., Iowa City, Iowa.

THE GREEN EARTH—An Invitation to Botany, by Harold William Rickett. Published by The Jaques Cattell Press, Lancaster, Pennsylvania. 353 pages, illustrated. Price $3.50.

Written in popular and friendly style, this comprehensive discussion of our relations with plants—upon which the human race is so utterly dependent—serves as a layman's guide to the fascinating subject of botany. Eliminating as many as possible of the technical botanical terms, Dr. Rickett has succeeded in humanizing the subject without "throwing out the baby with the bath." The content of the book is similar to courses in botany which Dr. Rickett has taught at the Universities of Wisconsin, Missouri and Reed College in Oregon and includes chapters dealing with the green color of leaves and what comes of it; the anatomy of leaves, the architecture of plants, the growth and purposes of plants, flowers and their fruits, ferns and moss, etc.

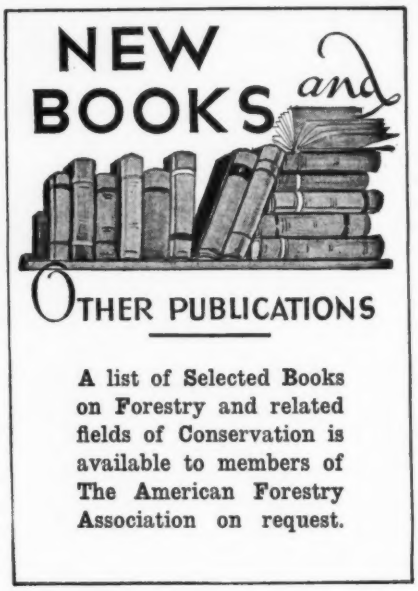
It is Dr. Rickett's belief that if we apply our knowledge of botany to good advantage we can "increase the bounty of the earth a hundred or a thousandfold; we can grow more food than we and our children can eat; we can obtain fuel for mechanical transport, for heat and light—from plants raised especially for these purposes."

LUMBERJACK BILL, by Sanford Tousey. Published by Houghton Mifflin Company, Boston, Massachusetts. 48 pages, illustrated. Price $1.75.

Bill visits his Uncle Dan's lumber camp in Wisconsin, sees how trees are felled and floated in the river and becomes such a good lumberjack himself that his uncle rewards him with an ax and peavy of his very own. His adventures are exciting, particularly after he has acquired the knack of walking on floating logs. This is excellent juvenile fare for arousing interest in the forests.

PUBLIC ADMINISTRATION AND THE UNITED STATES DEPARTMENT OF AGRICULTURE, by John M. Gaus and Leon O. Wolcott. Published by the Public Administration Service, Chicago, Illinois. 530 pages. Price $4.50.

Because the Department of Agriculture has been called an outstanding example of science and government, this book will be of interest to all students of government. It is a study of the far-flung administrative activities and set-up of a great arm of the national government, and is Vol. X of "Studies In Administration" undertaken by the Committee on Public Administration of the Social Science Research Council.



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

HOW'S INKY? by Sam Campbell. Published by the Bobbs-Merrill Company, Indianapolis, Indiana. 135 pages, illustrated. Price $1.50.

A book to charm the young and old,—this story of "Inky," the porcupine pet of that genial-hearted Philosopher of the Forest—as Sam Campbell is widely known in America. He has been writing and talking to thousands of audiences for the last ten years about Rack and Ruin the racoons, Bobette the fawn, Sausage the groundhog, Salt and Pepper and Inky the porcupines, and this book comes as an answer to the public demand for more about them. It's fascinating reading for everyone with a love of nature and the creatures of the woods.

CONSERVATION FOR TOMORROW'S AMERICA, by Ollie E. Fink. Issued by The Ohio Division of Conservation and Natural Resources, Columbus, Ohio. 144 pages, illustrated. Price 50 cents.

Dr. Fink is the Director of the Conservation Laboratory, located at Tar Hollow, in the Ross-Hocking Forest east of Chillicothe, where Mother Nature, with her many fascinating chapters, is the text-book. This book describes its work—it is full of information and suggestions for teaching conservation in both junior and senior high schools. Leather-booted geologists, khaki-clad botanists, ornithologists and scientists of the soil are there—to elucidate Nature's text to her pupils, student or teacher,—for "Writ on the wooded slopes is sober wisdom that man must have if he would dwell amiably in his earthly environment." *Conservation For Tomorrow's America* is an invaluable acquisition to the nature teacher.

THIS FASCINATING LUMBER BUSINESS, by Stanley F. Horn. Published by the Bobbs-Merrill Company, New York. 328 pages, illustrated. Appendix and Index. Price $3.75.

Nobody in, or even a casual observer of, the lumber business would deny that the adjective used in the title of this book is merited. In fact many lumbermen declare that it is fascination rather than remuneration that keeps the business going.

Be that as it may, lumbering is also a highly technical affair. It bristles from sawlog to finished products with, not one, but a dozen special vocabularies. Therefore, for the average reader, a dip into the literature of the forest industries is not very revealing. The vocabulary has to be mastered before the book can be understood—and try to find a good definition of a "cat skinner" or a "steam nigger" in a standard dictionary.

Stanley Horn, as editor of a large lumber-trade journal, has reason to know his industry. He has done a good job here in translating its vocabulary and explaining its intricacies—not only in the strict sense of the manufacture of lumber, but in the broader sense in which the term is increasingly understood—namely in application to the harvesting and manufacturing of all forest products. Perhaps he assumes that more lumbermen have been converted to the virtues of a sustained-yield philosophy in place of a "cut and get out" one, than actually have been. But no informed person denies a very significant reorientation in the point of view of the more responsible elements of the industry. There is reason, accordingly, for rejoicing in conservation circles. However, by no means all students of conservation problems will accept the author's apparent view that little more remains to be done to put our forests on a sustained-yield basis.

AND STILL THE WATERS RUN, by Angie Debo. Published by Princeton University Press, Princeton, N. J. 417 pages. Price $4.00.

A moving story, eloquently told, of the liquidation of the independent Indian republics known as the Five Civilized Tribes, in spite of the solemn treaties that were to endure "as long as the waters run." Many books have been written about the American Indian and the abrogation of his rights by land-hungry white men, but here for the first time is told—complete to the present day—the documented story of how the citizens of these republics were defrauded of their patrimony, their tribal governments dissolved and their ancient culture destroyed.

Austin Hawes, Connecticut State Forester, to Retire

AUSTIN F. HAWES of Connecticut, one of the best known state foresters in the United States, will retire early in 1944, it has been announced. He has served continuously in forestry since he graduated in 1903 with a Master's Degree in forestry from Yale University. Prior to that he graduated from Tufts College and, in 1936, was honored by that institution with the degree of Master of Science for distinguished service in his profession.

After a few years with the United States Forest Service, Mr. Hawes in

AUSTIN F. HAWES

1904 was appointed state forester of Connecticut, resigning in 1909 to accept a similar office in Vermont. During the last war he served as wood fuel administrator for the federal Forest Service. In 1921 he returned to Connecticut as state forester under the then newly established State Park and Forest Commission.

Mr. Hawes' second term in Connecticut has witnessed an amazing development of forestry in a state which, although one of the smallest in the union, is more than fifty percent forested. One of the measures of his accomplishment has been the increase in acreage of state forests. In 1920, state forest lands covered the insignificant total of 4,450 acres, in four units. At the end of 1942 they covered approximately 30,000 acres in twenty-two units, and the area is still increasing. Although most of the state forest area is young second growth, receipts from timber sales and miscellaneous sources amounted to over $54,000 in the fiscal year 1942—about seventy cents an acre.

Under Mr. Hawes' leadership, the administration, technical practices and research standards of state forestry in Connecticut have risen to among the highest in the United States. His influence has also extended far beyond the confines of his state. He is well known as a writer on forestry matters, has been president of the Association of State Foresters, a member of the Council of the Society of American Foresters, and now has the honor of being a Fellow in that Society. It is understood that Mr. Hawes intends to devote himself to forestry research and writing after his retirement.

His successor has not been appointed, but the Connecticut Civil Service has announced a competitive examination for the office of State Forester.

Record National Forest Receipts

NATIONAL forest receipts reached an all-time high of $10,056,448 in the fiscal year ended June 30, 1943, the U. S. Department of Agriculture has reported. This amount is nearly $3,000,000 greater than last year's figure of $7,112,896, which broke all previous records.

Receipts from timber sales accounted for a major portion of the total, amounting to $7,537,607, as compared with $4,952,442 in 1942. Practically all timber cut on the national forests is going into war uses. Next in importance were returns from grazing fees amounting to $1,973,233, as against $1,595,126 for the previous year. More than 10,000,000 head of livestock, producing meat, wool and leather for army and civilian use, graze national forest ranges, mostly in the western states.

Returns from special land use permit fees, such as rentals for summer home sites, resorts and other private or commercial developments permitted on national forest lands, totaled $392,709, an increase of $5,899; returns from water power rentals came to $80,362; and sale of miscellaneous forest products amounted to $51,149.

Of the ten national forest regions, including Alaska, receipts from the Pacific Northwest—Washington and Oregon—amounting to $3,445,733, topped all others. The southern national forest region, with receipts of $1,819,071, rated second place.

A number of national forests are now yielding returns well in excess of operating costs, including some units which were largely cut-over and burned-over lands acquired in recent years, and on which development work has been going on only a short time.

More State Forest Regulation

By P. L. BUTTRICK

SINCE publication of the article "Progress in Public Regulation of Private Forests" in the August 1943, issue of AMERICAN FORESTS, further information has come to light on developments in the state regulatory field.

It is reported that the 1943 legislatures of both Wisconsin and Michigan adjourned without taking action on regulatory bills before them. Two other states, Pennsylvania and Illinois, considered forest regulation bills. Both were of a special type analogous to the Indiana law in that if passed they would have required coal mine operators engaged in strip mining to have reforested or afforested, as the case might have been, their worked-over lands. The process of strip mining is one in which the top soil is removed over the entire area of operations, often many acres in extent, and the coal removed from open pits. The Pennsylvania law seems to have failed of passage because of lack of support and hurry in the closing hours of the session rather than from specific opposition. It had been reported on favorably by committees in both branches of the legislature. The Illinois legislature had before it two bills dealing with strip mining. One would have required back-filling the pits with top soil; the other, reforestation. The first bill passed; the second failed.

Unfortunately, no mention was made in the previous article of a state regulatory law passed in New Mexico in 1939. This law is based on the diameter limit principle. The limit for sawtimber restricts cutting to trees twelve or more inches in diameter four and one-half feet above the ground. For non-lumber products such as hewn ties and mine props, the limit is five inches in diameter four and one-half feet above the ground. The law also requires that all reasonable precautions be taken to prevent forest fires. It is the duty of the Commissioner of Public Lands to enforce the law. Penalties for non-compliance are provided.

It is also interesting to note that the Canadian Province of Nova Scotia passed a forest regulation law in 1942, known as "The Small Tree Conservation Act." Such a tree is defined in the law as: any hemlock, pine or spruce which measures less than ten inches inside the bark not less than one foot or more than two feet from the ground. Owners of more than 1,000 acres of forest land are forbidden to cut such trees. It is therefore a diameter limit law. Provision is made under which the Minister of Lands and Forests may issue license to cut smaller trees. Trees cut contrary to the law are to be confiscated by the minister and proceeds of their public sale goes into the Provincial Treasury. This law is discussed in detail in the June 1943 issue of *The Forestry Cronicle*, published by the Canadian Society of Forest Engineers.

Another Canadian development is a recent Order-in-Council by the Province of Ontario which states, "From and after this date (November 2, 1943) no mill may be erected or licensed capable of producing in any one year in excess of 15,000,000 feet of sawn lumber, which quantity shall be inclusive of sawn railway ties, mining or other timbers."

This order is apparently intended to limit production in the interests of forest conservation but is not forest regulation in the usual sense. Placing a maximum on the size of cut of mills operating in mature timber should tend to conserve the existing supply, but not necessarily result in types of cutting required to establish regrowth. In younger stands it probably, but not assuredly, would result in selective cutting, in which the smaller trees would be left to grow. Without limitation on cutting for other than sawtimber purposes, operations could be shifted to pulpwood or other forest products without diminishing the drain on the forest. Since the ratio of existing to new mills is presumably large, it is not immediately evident that the order will have much conservation effect.

George T. Gerlinger

George T. Gerlinger of Oregon, president of the Willamette Valley and Snow Peak logging companies, was elected president of the National Lumber Manufacturers Association at its annual meeting in Chicago on December 16. He succeeds M. L. Fleishel.

Forest Service Report Develops Case for Regulation

IN HIS annual report, Lyle Watts, chief of the U. S. Forest Service, paints a serious picture of the condition of American forests and proposes as a solution a three-point cooperative federal-state program embodying public regulation of forest practices on privately owned land, aid to forest landowners and extension of public ownership. Each of these approaches to the problem offers opportunity for both the states and the federal government, he said, but because forest conservation is so vital for national defense and national welfare, and because the states are so interdependent in regard to timber supply, the principal responsibility rests on the federal government.

Public regulation, he declared, to be nationwide and uniform in standards and enforcement, should be brought about by federal legislation to prescribe standards for required forest practices and authorize the Secretary of Agriculture to determine whether practices adopted by the states conform to such standards; to inspect enforcement of state laws; and to take direct action where suitable state legislation is not enacted and where enforcement or the practices established are not adequate.

Wartime demands, said Mr. Watts, have increased drain on the forests twenty-five percent above the 1936 level, and the generally destructive character of wartime timber cutting sacrifices growing stock that will adversely affect usable forest crops for decades after the war. He looks forward to postwar demands for lumber "almost as much as peak output of the war-boom years of 1941 and 1942," and forecasts greatly increased demand for pulp and paper products, wood plastics, plywood and wood derived ethyl alcohol.

"Europe's postwar timber deficit will probably be greater than the anticipated surplus of all the rest of the world," he said. "This, coupled with continued demands from Mexico and the Orient, means that our forests are likely to be under continuing pressure to supply more than domestic requirements. On the other hand, there is some question whether we can count on more than a partial restoration of our former imports of pulp and paper from northern Europe, and imports of all forest products from Canada are not likely to exceed prewar levels."

As to our domestic forest problem he said, "Unless aggressive steps are taken nationally, forest productivity will not reach the level of national need. Sawtimber growth, most critical and most important, is currently not much more than half of anticipated postwar requirements. There is danger of being misled by assuming that the apparent increase in growth in recent decades will continue. Whatever the actual increase, it is attributable largely to increased fire protection, new growth reaching merchantable size on abandoned agricultural lands in the East and the fact that an increasing proportion of the land cut over remains in forest use. So long as the major cutting was in over-mature timber, which was making little growth, the amount of young timber reaching merchantable size increased rapidly. Now that the cut must be in young timber, the increase of productive growing stock is being checked."

Skeleton of Atlantis

(*From page* 21)

been put into the ground between Manteo and Ocracoke on the southern tip of the island chain. Sand fences had been built of chicken wire and brush to catch the moving earth. In many places these efforts checked the fine sand particles and may eventually stop the shifting of the huge dunes.

One story they told was how Nag's Head got its name. Many years ago a number of horses swam ashore from a shipwreck off Hatteras. At the height of that era when pirates were preying even on pirates, a band of lawless men caught some of the horses and tied lanterns around their necks. The animals were allowed to graze along the shore, and a pirate ship, slipping down the darkness outside Hatteras, would see those lights and set its course to bear down on what it thought was another ship. When the attacking vessel ran aground, the waiting band of counter cut-throats would swarm over it.

On the afternoon of the second day, we set out for Manteo by plane, flying out over the "hook," by which name the curving tip of Cape Hatteras is known, and down the edge of the coast over Ocracoke, the most isolated town in this group of islands. We circled the fishing village and turned north again, roaring across the lower edge of Pamlico Sound.

We cut an arc against the sky above that land where centuries before pirate ships had crept along, feeling their way. A dim blue mist hid the mainland and obscured that line between the water and the sky, but far off to the east I could see the narrow island of Hatteras. In the distance it looked like a jagged chalk line drawn across the blue face of eternity. It might have been a skeleton outline of the lost Atlantis.

What Was the Early Indian Dog?

(*From page* 32)

and wolves tend to show that the quarter-breed is the better animal descending from the wolf-dog cross. The mating of a female tame wolf with a male collie, and the mating, in turn, of the resultant male halfbreeds with a female shepherd dog, have produced in some instances not only an exceptionally amenable, but a super-intelligent animal as well.

The ease with which the dog-wolf mating took place had apparently so dominated the physical characteristics as to change completely the so-called Indian dog from what it must have been prior to the long period of interbreeding. Hence, when Coronado, David Thompson and Alexander Henry, who were followed by other explorers, observed these dogs, the creature that was in earlier times considered a true dog, characterized by remains found in Indian middens and caves, had practically ceased to exist. By that time much wolf blood existed in the Indian dogs of the plains. In instances it is believed this was purposely done to obtain a large dog for use as a draught or pack animal—the main source of moving about on the plains prior to the advent of the Spanish horse.

Today the wolf-like animal has completely disappeared from the plains. The main factors contributing to this have been the almost total disappearance of the wolf from much of its original plains habitat, together with the removal of the Indians to the various reservations, and the resulting change in their mode of living. The latter finally brought a great diminution in the once over-abundant Indian dog population, be they wolf hybrids or other breeds. Something akin to what this population must have looked like is found in Alaska in the wolf-Eskimo dog crosses of resultant half- or quarter-breeds.

This Is the Mosquito!

(*From page* 15)

porated in the roof. The V-shaped windscreen is provided with curved panels at each corner which may be opened in flight to obtain direct vision. The nose portion of the molded perspex incorporates the bombardier's window of optically true glass, and is attached to the fuselage by screws.

When the remaining instruments and seating accommodation have been installed, the fuselage is covered with a linen-like fabric called madapolin. This skin-tight covering is treated with a secret weather-resistant substance, which is said by experts to make a better weather-resistant surface for aircraft than has yet been used on standard metal planes.

The wing of the Mosquito is a one-piece, wooden cantilever structure tapering in form and thickness, comprising two box spars which extend over the full span with wooden ribs between stressed plywood covering top and bottom, which in turn is covered with fabric. The top skin is made up of two sheets of plywood with spruce members running spanwise between, forming a cellular structure. The plywood is glued and screwed to the members. The bottom skin is one plywood sheet glued and screwed to the ribs and longitudinal members.

The wing is built in a main wing assembly jig where front and rear spars, interspar ribs, bottom skin and inner shell with stringers are attached. Birch plywood spars are received from subcontractors in a special railway car designed for this purpose. The wings are built vertically in the main wing assembly jigs so that both upper and lower surfaces are accessible.

Fuel tanks are housed completely within the wing and are accessible from the underside by means of detachable panels. Inspection doors are built in flush on the top side. When all attachments and housing for lights have been put in place, it is then sent to the "dope room" where twelve coats are sprayed on, with a sandpaper rubdown between each coating. After this treatment gas

tanks, pipes and all wiring are installed.

The tail unit is of conventional design without external bracing. It is of wooden construction except for the rudder, elevator and trim tabs, which are metal. There are no adjustments to either the horizontal stabilizer or fin when in flight. The stabilizer is a symmetrical sectional one-piece cantilever structure, comprising two continuous box spars, spruce and plywood ribs, and plywood covering. The single fin is of similar construction.

At the final assembly plant the stabilizer and fin are attached to the fuselage, which is then raised to flying position by chains for lowering onto the wing. With the wing fitted the engines are put in place, and the bomb bays attached and tested. The tail wheel landing gear is attached, and final assemblies are made, after which the aircraft is thoroughly checked before being test-flown.

Although the Mosquito is basically a wooden plane, there is still a considerable amount of metal, in addition to wiring and piping, in the plane's construction. Control surfaces and fairing in many parts of the aircraft are of sheet metal. For this work standard aircraft manufacturing operations are used.

The Mosquito has a wing span of fifty-four feet two inches, an overall length of forty feet nine and a half inches, and is fifteen feet three inches high. Its range is 2,000 miles, as the Axis powers have already discovered.

Holly Culture as a Hobby

(*From page* 13)

tain the plantation at odd times. Mr. Wolf believes that given adequate food, holly will be thrifty and develop a deep green color and clusters of bright red berries. He feels that it will, in reality, grow more rapidly than is generally supposed. In cultural practices he has been guided by the technique of Earle Dilatush, one of New Jersey's outstanding holly growers.

Liberal amounts of oak leaf mold, cottonseed meal and tankage are used to feed each tree. Salt hay, a product of the New Jersey tide marshes, is placed around the base as a moisture retainer. Some spraying has been done, but to keep the trees healthy, Mr. Wolf places more faith in proper plant food in adequate amounts.

For two years Italian rye grass was planted between the rows as a cover crop to be ploughed under. This did not prove too successful, however, because of drought, and next spring clover and rye will be tried. Last summer was particularly dry in parts of south Jersey and in order to water the plantation, an old gasoline tank was mounted on a truck. No trimming has yet taken place in this plantation, but it will begin this season. In a few years, it is believed, more than sufficient holly will thus be obtained for the Christmas boxes.

"You know," said Mr. Wolf, "the men at the plant take quite an interest in this plantation. When they go hunting or are out in the woods they are constantly on the lookout for trees suitable for transplanting. They bring me a branch of a likely looking holly and if I think it is a good specimen with deep color or an unusually large leaf or especially fine berries, I arrange to bring it in.

"Why, a year or two ago some of our men hunting in a swamp found a holly with a leaf over three inches long. The next Saturday I went down with them and we located a half dozen such trees which we arranged to bring back. Some day they will be beautiful specimens."

Mr. Wolf does not attempt propagation either from seeds or cuttings, but certain specimens which have unusual promise are sent to the Boyce Thompson Institute in Yonkers, New York, where they are rooted and returned to Millville. They are then placed in a small nursery close by the office and later are set out as planting stock.

He has a few of the celebrated firecracker hollies which are being carefully nurtured from the flower-pot stage. Firecracker holly is the name given to a recently discovered variety that carries an everlasting crop of berries. Found growing in a Virginia dooryard, it retains its fruit for two years, producing a new season's crop at the same time.

Some of the customers whose interest in holly has been stimulated by the Christmas packages have expressed a desire for a living tree. These have been delivered by a salesman or in the very novel way of sending a holly in a box car along with the load of sand, care being taken at all times to include a bag of oak leaf mold, cottonseed meal and tankage.

Mr. Wolf has learned the secret of transplanting wild holly which, in the interests of seeing holly more widely used as an ornamental tree, he has no hesitancy in sharing. "At first," he said, "we had a great deal of trouble transplanting wild stock. Holly has an extensive lateral root system and naturally when the tree is dug so many roots are severed that it dies. We found that by pruning roots a year before we moved the tree we could transplant holly successfully. We have had almost no losses since we began root pruning."

"Why shouldn't I buy it? I've got the money!"

Sure you've got the money. So have lots of us. And yesterday it was all ours, to spend as we darn well pleased. But not today. Today it isn't ours alone.

"What do you mean, it isn't mine?"

It isn't yours to spend as you like. None of us can spend as we like today. Not if we want prices to stay down. There just aren't as many things to buy as there are dollars to spend. If we all start scrambling to buy everything in sight, prices can kite to hell-'n'-gone.

"You think I *can really keep prices down?"*

If you don't, who will? Uncle Sam can't do it alone. Every time you refuse to buy something you don't need, every time you refuse to pay more than the ceiling price, every time you shun a black market, you're helping to keep prices down.

"But I thought the government put a ceiling on prices."

You're right, a price ceiling for your protection. And it's up to you to pay no more than the ceiling price. If you do, you're party to a black market deal. And black markets not only boost prices—they cause shortages.

"Doesn't rationing take care of shortages?"

Your ration coupons will—if you use them wisely. Don't spend them unless you have to. Your ration book merely sets a limit on your purchases. Every coupon you don't use today means that much more for you—and everybody else—to share tomorrow.

"Then what do you want me to do with my money?"

Save it! Put it in the bank! Put it in life insurance! Pay off old debts and don't make new ones. Buy and hold War Bonds. Then your money can't force prices up. But it can speed the winning of the war. It can build a prosperous nation for you, your children, and our soldiers, who deserve a stable America to come home to. Keep your dollars out of circulation and they'll keep prices down. The government is helping—with taxes.

"Now wait! How do taxes help keep prices down?"

We've got to pay for this war sooner or later. It's easier and cheaper to pay as we go. And it's better to pay more taxes NOW—while we've got the extra money to do it. Every dollar put into taxes means a dollar less to boost prices. So . . .

Use it up . . . Wear it out . . .
Make it do . . . Or do without

HELP US KEEP PRICES DOWN

A United States war message prepared by the War Advertising Council, approved by the Office of War Information, and contributed by the Magazine Publishers of America

Root pruning is done by cutting around the entire tree with a spade and all but lifting the tree out of the ground. Oak leafmold and tankage are then packed around the tree and when it is moved the next spring a mass of feeding roots have grown.

He believes that most people who try to transplant wild holly want to make an immediate showing and select too large a tree. It is axiomatic that the larger the tree of any species, the more the root system is disturbed in moving it, with diminishing chances of success. Also, he feels that people are too particular regarding the form of a wild tree. If it is thrifty, it can be shaped after it has been transplanted to the lawn where better growing conditions exist than in the woods.

Mr. Wolf talks on his avocation to service clubs and other groups and is evidently very persuasive, as the following letter which is quoted in part indicates:

"The Club membership took an even greater interest in your subject than I had anticipated. I have had many pleasing comments and I will pass one along to you:

"A tract of timberland was to be sold the following day and one of my clients, who is a member of the Rotary Club, told me he knew there was a lot of holly on the back part of the tract; that he was too busy to attend the sale and asked me if I would be willing to have my son attend and purchase the property; that he thought he would like to have some holly of his own. He bought the property."

CREDIT FOR PHOTOGRAPHS

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Fader, Calvin—(drawing) page 32.

General Motors—page 14.

Macmillan Company, The—page 30 (lower).

New Hampshire, University of—Photo Visual Service—pages 24 and 25.

U. S. Forest Service—pages 6, 16 and 17.

WHO'S WHO
Among the Authors in this Issue

JAMES MONTAGNES (*This Is the Mosquito*) is a news and feature writer who specializes at this time in current developments in Canadian fields of industrial endeavor. An old newspaper man, Mr. Montagnes has been free-lancing since 1928, his work appearing in papers and magazines in the United States, Canada, Great Britain, Australia and New Zealand and—before the war, in continental European publications.

CHARLES ELLIOTT (*Skeleton of Atlantis*), forester and writer, is director of the Georgia Game and Fish Commission and writes from Atlanta — a fascinating story of the historic dunes along our Southern Atlantic coastline.

Arthur Priaulx

ARTHUR PRIAULX (*The Mountain Boomer — a Woodland Tojo*) is a native Californian. Majoring in journalism and political science in college, he has been an active news writer and publisher since 1922. Mr. Priaulx at present directs Oregon information and public relations for the West Coast Lumbermen's Association.

A. T. COTTRELL (*Holly Culture — A Hobby*) is a Yale Forest School man, class of '26. Working in various branches of its activities, he has been with the New Jersey Department of Conservation and Development for many years, concentrating now on public relations.

WALTER BRECKENRIDGE (*Solving the Labor Shortage*) was graduated from the New York State College of Forestry in 1935. He is attached to the New Hampshire Extension Service in cooperation with the U. S. Forest Service as Norris-Doxey Farm Forester. His main job is giving assistance to farmers in methods of marketing their timber.

STANLEY P. YOUNG (*What Was the Early Indian Dog?*), writer and senior biologist of the U. S. Fish and Wildlife Service, concludes in this number his interesting story on the much debated origin of the Indian dog.

G. H. COLLINGWOOD (*Eastern Hophornbeam—Tree Series*) is Chief Forester and Assistant Secretary for the National Lumber Manufacturers Association and writes from Washington, D. C.

THE COVER—"Wood—On the Way to Fight for Victory in the New Year." K. S. Brown Photo.

To be read before the 4TH War Loan Drive

ONE DAY SOON, someone will come to see you.*

He, or she, will ask you to lend your Government at least an extra $100 this month. To put at least an extra $100, over your regular Bond buying, into War Bonds for the 4th War Loan.

Don't—*don't* say you can't afford it even though you may wonder how you're going to get that money.

If you think that getting the money is going to be hard, why, before the doorbell rings, look at the faces of these dead countrymen of yours. Read their stories.

Then think how hard it would be to have to tell Americans like these that *other* Americans can't afford to lend *at least* an extra $100!

**If, by chance, you should be missed—don't think your money isn't needed! Go and buy those extra Bonds, yourself!*

Lieutenant William G. Farrow was one of Jimmie Doolittle's Tokio raiders. His plane made a forced landing in Japanese territory and Lieutenant Farrow is believed to be one of the American aviators who was executed by the Japanese some time later.

Rear Admiral Daniel J. Callaghan commanded the U.S.S. San Francisco. Driving his ship straight through the midst of a greatly superior Jap fleet, he directed operations from the deck of his flagship until blown to pieces by a Jap shell.

Lieutenant George H. Cannon, U.S.M.C., was mortally wounded during the Jap bombardment of Midway, Dec. 7th. He refused to be taken to a hospital till all his men had been evacuated, and as a result, he died of loss of blood.

Lieutenant Alexander Nininger fought his way, hand-to-hand, into the Jap lines on Bataan. Wounded 3 times, he continued to advance until he was killed. When his body was found, a Jap officer and two Jap soldiers lay dead around him.

Seaman first class James R. Ward was stationed in a gun turret in the Oklahoma on Dec. 7th. When the order was given to abandon ship, he stayed in his turret holding a flashlight so that the rest of the crew could see to escape. He was drowned.

Captain Albert H. Rooks was commanding officer of the U.S.S. Houston. Engaging an overwhelming Jap force, the Houston smashed into them and went down, guns blazing. Rooks went down with his ship.

Keep backing the attack!

The Treasury Department acknowledges with appreciation the publication of this advertisement by

AMERICAN FORESTS MAGAZINE

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This advertisement prepared under the auspices of the War Advertising Council and the U. S. Treasury Department

INDIANS HAVE ALWAYS PLAYED AN IMPORTANT PART IN AMERICAN HISTORY

Woodcut illustration from the Bettman Archive of *Custer's Last Stand*—one of the most famous episodes in the Indian Wars of the United States. The event took place June 24th, 1876, at the Little Big Horn River in Montana territory. Custer and his entire command were massacred by an overpowering force of Sioux Indians.

INDIAN FIRE PUMPS are making a name for themselves today!

QUICK death to grass, brush and forest fires, these handy, portable extinguishers are the favorite of thousands of veteran fire fighters throughout the country. There's no time lost with INDIAN FIRE PUMPS. Slung on the back in an instant, they are ready for action at once—no chemicals or cartridges to cause delay.

INDIANS use only clear water, throwing a 40 foot pressure stream that drives right into the base of the flame. The strong, rust-proof tank has a capacity of five gallons—is easily carried by handle or slung on the back like a pack. Tank is air-cooled and protects the carrier's back against moisture.

Be sure you have an ample supply of these famous fire pumps. They are your best friend when fire breaks out. Send in your order now or write for further details.

Remember, an INDIAN will serve you just as well on an *inside* as it does on an *outside* fire. Smashing into the flame, the pressure stream makes short work of the fire—kills it before it spreads.

D. B. SMITH & CO. 405 Main St., UTICA 2, N. Y.